B L U M E A

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REVISION OF THE SAPOTACEAE OF THE MALAYSIAN AREA IN A WIDER SENSE

IIa [1]). Additional notes on Burckella Pierre

by

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(Issued 15. VI. 1957).

After the revision of *Burckella* (Blumea 6, 1952, 580—593) some new material became available which enabled the description of the fruits of two species. In addition, some details of two more species can now be given.

1. B. macropoda (Krause) H. J. Lam, var. **macropoda**; van Royen, Blumea 6, 1952, 584—586 — *Fig. 1 a.*

The fruit of this species was unknown but can now be described from collections made in Western New Guinea.

Fruits pyriform, 9—11 by 3.5—5 cm, shortly obtusely acuminate, one-seeded, glabrous, pale brown, pericarp woody; seeds 8—10 by 3—4.5 cm, testa thin, pale cinnamomous without, light brown with numerous small dark brown patches within, scar very broad, covering almost the whole seed, leaving free a c. 1 m broad ovate, part of the seed only, embryo 4—5 by 2—2.5 cm, exalbuminous, cotyledons thick, dark red-brown when dry; pedicel stout, c. 3.5 by 0.5 cm, glabrous.

WESTERN NEW GUINEA. Hollandia, Cycloop Mts, trail Ifar-Ormu, near Jabu Creek, alt. c. 900 m, in forest dominated by Sapotaceae: *van Royen 5571* (L), tree c. 40 m, juv. fr. green, mature one brown,

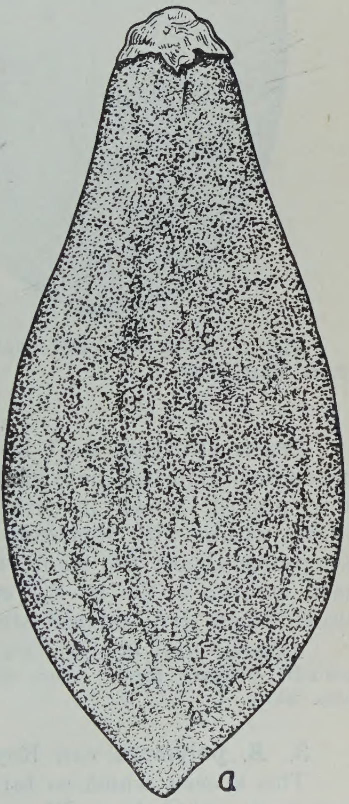

Fig. 1. *Burckella macropoda*, var. *macropoda*, a. mature fruit. (van Royen 5571).

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[1]) I—III in Blumea VI, 3, 1952, 547—595; IV—V in Blumea VII, 2, 364—412; IVa in Blumea VII, 3, 1954, 481—483; IIa, IVb, Va and VI—IX in the present issue.

Dec., latex white; Hollandia, Holtekang, alt. c. 2 m, in primary forest: *NNGFS BW 1518* (= *Schram s.n.*) (HOLL, L), tree c. 40 m. fl. light green, fr. green, later brown, Oct., latex white.

2. **B. erythrophylla** H. J. Lam; van Royen, l. c., 592 — *Fig. 2.*
As also of this species fruits were unknown a description can be given from material collected in Eastern New Guinea.

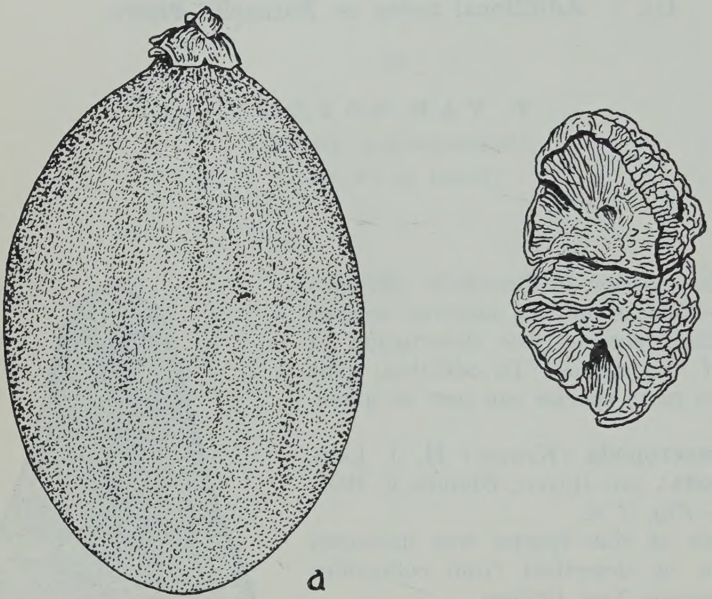

Fig. 2. *Burckella erythrophylla,* a. mature fruit, b. embryo in transverse section (from Hart 5020).

Fruits ellipsoid, 5—7 by 4—4.5 cm, apex shortly obtusely acuminate, one-seeded, glabrous, pale brown, pericarp woody; seeds c. 6 by 3.5 cm, testa thin, pinkish brown in vivo, pale cinnamomous when dry without, light brown within with numerous dark brown small patches, scar very broad, occupying almost the whole seed, leaving free only a c. 1 cm broad, ovate part, embryo c. 2.5 by 2.5 cm, exalbuminous, cotyledons thick, dark red-brown when dry; pedicel stout, c. 2 by 0.5 cm, glabrous.

EASTERN NEW GUINEA. Papua, Western Division, bank of Oriomo river, near saw-mill, primary forest: *Hart 5020* (A, L, LAE, NSW), tree c. 28 m, fr. brown, latex white.

3. **B. polymera** van Royen, l. c., 590—591, f. 3.
This species which so far has been found in Eastern New Guinea only is now reported from Western New Guinea as well. To the description given in 1952, the following details can be added:

Tree up to 28 m. Leaves up to 22 by 9 cm, juvenile ones ferruginously puberulous below, mature ones greyish brown puberulous below. Secondary nerves up to 30.

WESTERN NEW GUINEA. Hollandia, Tami: *NNGFS BW 1638* (= *Schram s.n.*), tree 28 m, Jan., vern. name: fala ko-ra (Njou dialect), pwa (Skou dialect); ibidem, Tami: *NNGFS BW 1667* (= *Schram s.n.*), tree 25 m, Jan.

4. B. hillii (Baker) H. J. Lam; van Royen, l. c., 583—584, f. 1.

This species has been found only once in 1878 but is again represented in a collection made by A. C. Smith in 1954. To the description given in 1952 the following details can be added:

Trees up to 15 m, petioles 0.5—2.5 cm and the pedicels of the immature fruit up to 4 cm long.

FIJI. Viti Levu, Tailevu, hills east of Wainimbuka river, in vicinity of Ndakuivuna, alt. 100—200 m, dense forest: *A. C. Smith 7187* (L, US), slender tree 10 m, juv. fr. April.

REVISION OF THE SAPOTACEAE OF THE MALAYSIAN AREA IN A WIDER SENSE

Va [1]). Additional notes on Manilkara Adanson

by

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(Issued 15. VI. 1957).

After the revision of *Manilkara* (Blumea 7, 1953, 401—412) new material became available and enabled the description of a new species.

Manilkara napali van Royen, nov. sp. — *Fig. 1.*

Arbores, ad 36 m alta. *Ramuli* gracilis, ad 5 mm diam., canescentes sed parte apicali nigri et viscidi, glabri. *Folia* apicem ramulorum versus sparse conferta, obovata 7—13 × 3—7 cm, apice obtuse acuminata, acumine usque ad 5 mm longo saepe obliquo, vel apice rotundata et emarginata, basi cuneata, breviter decurrentia, coriacea, juvenilia supra glabra atro-brunnea et canescenti-fusca, subtus cinnamomeo-puberula, glabrescentia, adulta subtus cinnamomea et glabra; margines prope petiolum in sicco revoluti; costa supra impressa, subtus prominens et hippocastanea, nervis secundariis 11—15 erectis, sub angulo c. 60° ascendentibus, supra prominulis, subtus distincte prominentibus, arcuatim conjunctis, nervis tertiariis secundariis parallelis inter nervos secundarios singulis, reticulatione minuta, supra indistinctis, subtus sat conspicuis; petiolus 1.8—3.7 cm, supra sulcatus et in parte basali verrucis multis albis munitus. *Flores* 2—7 in axillis foliorum apicalium, pedicelli 1.5—2.3 cm, augulares, cinnamomeo-sericei, apice subincrassati. *Sepala* 6, lanceolata, 7—9 × 3—4.5 mm, apice acuta, interiora margine membranacea, exteriora extus fasciculis pilorum minutis cinnamomeo-puberula, intus sparse albido-tomentosa. *Corolla* 6—10 mm alba vel lutea lobis 6 lanceolatis 5—8 × c. 1.5 mm obtusis ad subacutis interdum paulo denticulatis, appendicibus 12 lanceolatis 2.5—4 × c. 1 mm, denticulatis apice acutis, basi subauriculatis. *Stamina* 6, 3—4 mm longa, filamentis lancolatis 1.5—2 mm longis, antheris sagittatis 2.5—3.5 mm longis, acuminatis, thecarum basi obtusa. *Staminodia* 6, 2—3 mm longa irregulariter flabelliformia margine dentata, dentibus inaequalibus quorum maximae 6 valde elongatis. *Ovarium* ovoideum 1.5 × 1 mm, 6-loculare et 6-lobatum

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[1]) I—III in Blumea VI, 3, 1952, 547—595; IV—V in Blumea VII, 2, 364—412; IVa in Blumea VII, 3, 1954, 481—483; IIa, IVb, Va and VI—IX in the present issue.

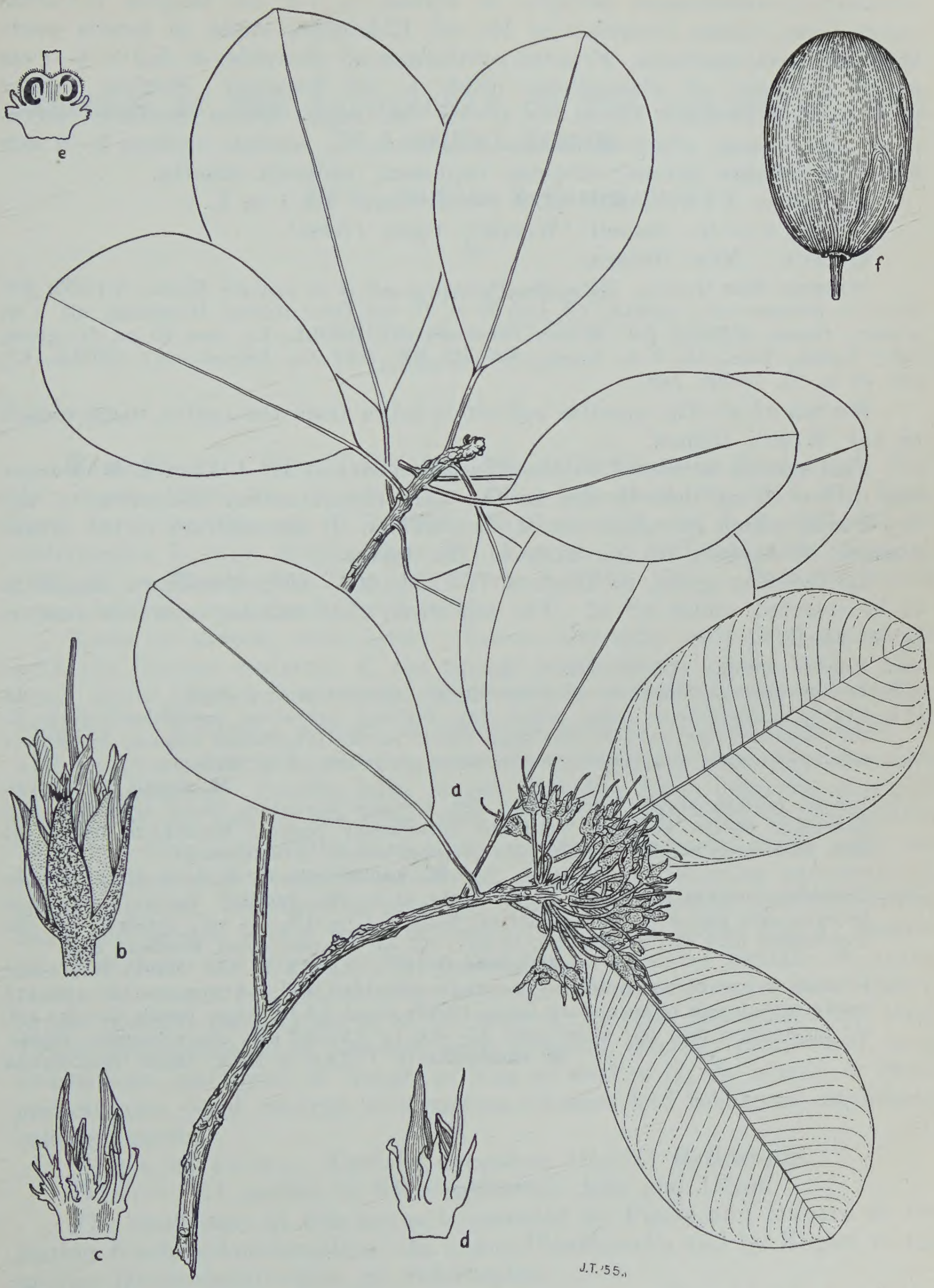

Fig. 1. *Manilkara napali,* a. habit, b. flower, c. inner view of corolla, d. outside of corolla, e. longitudinal section of ovary, f. mature fruit. (from *NNGFS 1579*).

cinnamomeo-tomentosum abrupte in stylum c. 1.5 cm longum sulcatum angustatum, discus irregulariter 10- vel 12-lobatus, ovula in loculis parte inferiore, hemi-anatropa. *Fructus* pyriformes ad obovoidei 4—5.5 × 3—4 cm glabri atrofusci ad cinnamomei nitidi 1- vel 2-spermi. Semina oblique pyriformia 2.2—3.2 × 1.5—1.8 × 1—1.5 cm, supra hilum distincte verrucosa; testa crassa, albido-canescens; cicatrix c. $^{2}/_{3}$ seminis metiens 3—5 mm lata; cotyledones tenues; albumen copiosum, radicula exserta.

Typus: *NNGFS BW 1579 (= Brouwer s.n.)* in L.

Nom. vern.: napali (Wembi), tijem (Arso).

Distr.: New Guinea.

WESTERN NEW GUINEA. Hollandia, Holtekang, alt. 2 m, primary forest: *NNGFS BW 1579 (= Brouwer s.n.)* (HOLL, L), tree 36 m, fl. red, Oct.; ibidem, Holtekang, alt. 2 m, primary forest: *NNGFS BW 49 (= Versteegh 68)* (HOLL, L), tree 26 m, fr. green, Oct.; ibidem, Tami, alt. 2 m, forest: *NNGFS BW 1626 (= Schram s.n.)* (HOLL, L), tree 34 m, fl. yellow, Jan.

Remarks: The specific epithet is taken from the native name napali in the Wembi dialect.

This species is related to *Manilkara kanosiensis* H. J. Lam & B. Meeuse but differs from that species in the pale cinnamomous underside of the dry leaves, which is reddish in *M. kanosiensis*. It also differs in the larger number of flowers in the axils of the leaves.

In the Key given in Blumea 7, 1953, 404—405, *Manilkara napali* is to be inserted under n° 12. The key from that number onwards now is to be read:

12.a. Leaves obovate; flowers with a disk 13

b. Leaves oblong, elliptic or obovate-elliptic; flowers with a disk 14

13.a. Leaves cinnamomous below when dry, tertiary nervation parallel-reticulate to the secondary nerves, with the same colour as the interjacent tissues; branchlets ustulate at apex and viscid; corolla white or yellow. *New Guinea.*
M. napali van Royen

b. Leaves reddish brown below when dry, tertiary nervation finely reticulate and distinctly darker coloured than the interjacent tissues; branchlets brown at apex and rarely viscid; corolla pale greenish white. *New Guinea.*
M. kanosiensis H. J. Lam & B. Meeuse

14.a. Secondary nerves ascending at an angle of c. 70°, tertiary nerves mostly one between each pair of secondary nerves; buds c. 1 by 0.3—0.4 cm; petals 1—1.2 cm, appendages 0.25 cm; staminodes, if any, 0.2 by 0.2 cm; ovary 6-celled. *Fiji.*
M. vitiensis (H. J. Lam & E. van Olden) B. Meeuse

b. Secondary nerves ascending at an angle of about 85°, tertiary nerves about 3 between each pair of secondary nerves; buds about 1.5 by 1 cm; petals 1.1—1.3 cm, the appendages 0.75 cm; staminodes 0.3—0.6 by 0.2—0.3 cm; ovary 9-celled. *Samoa.*
M. samoensis H. J. Lam & R. A. Maas Geesteranus

REVISION OF THE SAPOTACEAE OF THE MALAYSIAN AREA IN A WIDER SENSE

VI [1]. Xantolis Rafinesque

by

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(Issued 15. VI. 1957).

Xantolis Raf., Sylv. Tell., 1838, 36 — *Planchonella* Pierre, p.p., Not. bot. Sapot., 1890, 34; Dubard, Ann. Mus. col. Mars. 20, 1912, 41; Lam, Ann. Jard. bot. Bzg, sér. 3, 7, 1925, 193; Lam, l. c., sér. 3, 8, 1927, 467 — *Sideroxylon* L., p.p., Engler, Nat. Pfl. Fam. 4, 1, 1897, 143 and Nachtrag, 1897, 27 — *Hormogyne* DC, p.p., Prodr. 8, 1844, 176 — *Pouteria* Aublet sensu Baehni, p.p., Candollea 9, 1942.

Trees or shrubs, often spiny. *Leaves* alternate, estipulate, sometimes with the flowers conferted at the tips of brachyblasts, entire, with a marginal nerve, tertiary nervation transverse or reticulate, sparse, slender. *Flowers* ⚥, 5-merous, solitary or clustered, axillary or sometimes along an axillary shoot, bracts small. Calyx with a short tube and mostly lanceolate lobes, marcescent. *Corolla* lobes longer than the tube. *Stamens* generally inserted at the base of the lobes, each with two small tufts of ferruginous hairs on either side of the base of the glabrous filaments, rarely only one hair, anthers sagittate, with prolonged connective, dehiscing extrorsely or slightly lateral. *Staminodes* petaloid, often long aristate, fimbriate-ciliate along the margin, except in *X. racemosa* (Dub.) van Royen and *X. siamensis* (Fletcher) van Royen in which the margin is either dentate or entire. *Ovary* 5-, rarely 4-celled, densely hirsute, disk absent; style long exsert, ovules inserted halfway up or at the base of the cells, funiculus often long. *Fruits* drupaceous, 1- or 2-seeded, seeds ellipsoid, laterally compressed, testa crustaceous, scar ovate or linear, as long as seed to $^2/_3$ its length, or small and circular, basal, embryo with copious albumen and foliaceous cotyledons, radicle exserted.

Type species: *Xantolis tomentosa* (Roxb.) Rafinesque.

Distr.: 14 species in SE Continental Asia and Luzon.

The main part of this genus is included by Pierre and Dubard in the section *Hookeriplanchonella* of the genus *Planchonella* and by Engler in the section *Hookerisideroxylon* of *Sideroxylon*.

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[1] I—III in Blumea VI, 3, 1952, 547—595; IV—V in Blumea VII, 2, 1953, 364—412; IVa in Blumea VII, 3, 1954, 481—483; IIa, IVb, Va, VI—IX in the present issue.

They differ from all other species of *Planchonella* in the short tube and long lobes of calyx and corolla, in the sagittate anthers with prolonged connective and in the indumentum of the throat of the corolla, which consists of two small bundles of hairs, sometimes only one hair, at each side of the base of the filaments. The staminodes are fimbriate or lacerate along the margin and thus differ considerably from those in its nearest ally *Planchonella.* The number of cells of the ovary tallies with that of *Planchonella* (4 or 5). From *Pouteria Xantolis* differs in the floral details and the copious albumen of the embryo.

The geographical distribution (*Fig. 1*) provides another feature worthwhile mentioning. In its present delimitation *Xantolis* is found in the SE part of Continental Asia, but N of the Kra Isthmus. One species is found in Luzon. Thus the area is marginal to that of *Planchonella.*

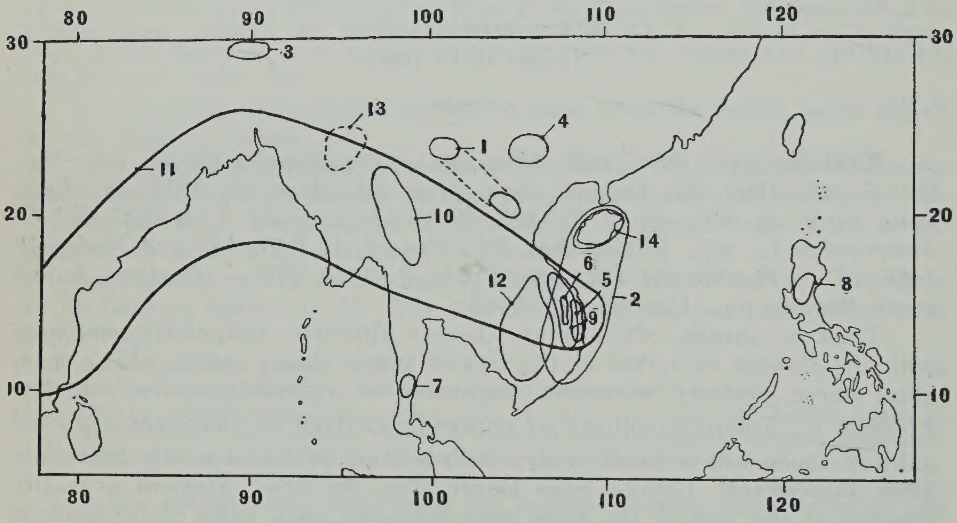

Fig. 1. Distribution of the genus *Xantolis.* 1. *hookeri,* 2. *boniana,* 3. *shweliensis,* 4. *stenosepala,* 5. *racemosa,* 6. *baranense,* 7. *siamensis,* 8. *parvifolia,* 9. *maritima,* 10. *burmanica,* 11. *tomentosa,* 12. *cambodiana,* 13. *assamica,* 14. *embeliifolia.* The areal of 13. *X. assamica* is indicated by a broken line as no definite localities are known except "Assam".

These details taken together provide ample reason to regard *Xantolis* as a separate genus. It is admitted that the differences are small but this is customary in many groups of the Sapotaceae, notably in the Eumadhuceae (*Burckella, Madhuca, Payena, Ganua*), and those between *Xantolis* and *Planchonella* may be regarded as being of the same order.

One might oppose that in separating *Xantolis* from *Planchonella* a further subdivision of *Planchonella* is also possible on similar grounds. An intensive study of the details of the genus *Planchonella sensu meo,* however, showed that the floral details are rather uniform though the foliar details may differ considerably. In a next issue of this series it will be pointed out that a further subdivision of that genus in different genera is unfeasible. In case *Xantolis* should not be kept separate from *Planchonella* the latter name will have to be conserved against the former.

Abbreviations of literature

Baehni 1942 = Ch. Baehni, Mém. Sapot. 2, Le genre Pouteria — Candollea 9, 1942, 147—476.
Dubard 1912 = M. Dubard, Les Sapotacées du group des Sideroxylées — Ann. Muss. col. Mars. 20, 1912, 1—90.
Lam 1925 = H. J. Lam, The Sapotaceae etc. of the Dutch East Indies — Bull. Jard. bot. Bzg, sér. 3, 7, 1925, 193—218.
Lam 1927 = idem, Further Studies etc. — Bull. Jard. bot. Bzg, sér. 3, 8, 1927, 467—476.

The herbarium abbreviations used here are those proposed by Lanjouw and Stafleu in the "Index Herbariorum", ed. 2, part 1, 1954.

Fl. means flowering specimens; fr. fruiting specimens; when nothing is added before the name of the month the specimen is sterile. S.n. means unnumbered specimen.

In all figures dimensions are given in mm.

Key to the taxa

1.a. Tertiary nervation transverse 2
b. Tertiary nervation reticulate to parallel to the secondary nerves 8
2.a. Flowers solitary or in clusters along 7—30 mm long axillary shoots; leaves obovate or obovate-oblong, 12—22 by 4.5—7 cm, obtusely acuminate, secondary nerves 8—13*, petioles 10—17 mm long, broadly grooved or flat above, glabrous. *Indochina* . . . . **5. X. racemosa** (Dub.) van Royen
b. Flowers solitary or in clusters, axillary to leaves 3
3.a. Sepals glabrous within. *China (Yunnan)*
1. X. shweliensis (W. W. Smith) van Royen
b. Sepals pubescent within 4
4.a. Secondary nerves 5—13, leaves 6—12 by 2.8—5.5 cm; pedicels glabrous . . 6
b. Secondary nerves 10—17 and sometimes 5—8 additional short ones at the apex of leaf close to each other, leaves 12—22 by 4—6 cm; pedicels pubescent . . 5
5.a. Mature dry leaves brown-olivaceous above, greyish below; greyish tomentose below when young. *China (Yunnan)* . . **4. X. stenosepala** (Hu) van Royen
b. Mature dry leaves blackish above, brown below, ferruginously tomentose below when young. *India and Indochina* . . . **3. X. hookeri** (Clarke) van Royen
6.a. Fruits glabrous; secondary nerves of leaf 5—8, ascending at an angle of 35°—55°, tertiary nerves rather numerous. *Indochina*
2. X. boniana (Dub.) van Royen, var. **boniana**
b. Fruits pubescent; secondary nerves of leaf 9—13, ascending at an angle of 50°—65° 7
7.a. Scar of seed as long as the seed, the latter 2—3 cm long. *Hainan*
2. X. boniana (Dub.) van Royen
var. **rostrata** (Merr.) van Royen
b. Scar of seed 2/3 the length of the seed, the latter up to 2 cm long. *Laos*
2. X. boniana (Dub.) van Royen
var. **pavieana** (Pierre) van Royen
8.a. Sepals glabrous within, staminodes pubescent within. *Indochina*
6. X. baranense (Lec.) van Royen
b. Sepals pubescent within, staminodes glabrous within 9
9.a. Petioles pubescent 10
b. Petioles glabrous 13
10.a. Leaftips rounded or short and broad obtusely acuminate, leaves 2—7.5 by 2.5—4.5 cm, secondary nerves 5—11, petioles 2—5 mm long 11

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* The number of secondary nerves is that at one side of the midrib.

b. Leaftips long acutely acuminate, obtusely acuminate or obtuse, leaves 4—16.5 by 2—7 cm, secondary nerves 8—16, petioles 5—20 mm long 12

11.a. Leaves rhomboid-obovate or elliptic, rounded or short obtusely acuminate. *Indochina and Siam* . . . . 12. **X. cambodiana** (Pierre) van Royen var. **cambodiana**

b. Leaves lanceolate, markedly attenuate at the tip. *Indochina* 12. **X. cambodiana** (Pierre) van Royen var. **thorelii** (Lec.) van Royen

12.a. Mature seeds black when dry, 10—12 by 3—4 by 2—3 mm, fruits ellipsoïd or ovoid, 2—3 by 0.8—1.5 cm, beaked by the persistent style; base of leaf abruptly narrowed and decurrent along petiole. *Assam* 13. **X. assamica** (Clarke) van Royen

b. Mature seeds brown when dry, 16—20 by 6—11 by c. 5 mm, fruits ovoïd or fusiform, 2—3 by 1—1.8 cm, acute or obtuse, rarely beaked by the persistent style; base of leaf gradually narrowing towards petiole, decurrent. *India to* 11. **X. tomentosa** (Roxb.) Rafin.

13.a. Leaves suborbicular or broadly obovate, 1.2—3 by 0.8—2.5 cm; secondary nerves 3—6; spiny trees. *Indochina* . . . . 9. **X. maritima** (Pierre) van Royen

b. Leaves elliptic or spatulate, 2—16 by 0.6—6 cm, secondary nerves 5—16; trees mostly without spines but if spiny, secondary nerves 8—16 and leaves 4—14 by 2—6 cm 14

14.a. Leaves and flowers at the tips of brachyblasts 15

b. Leaves scattered, flowers axillary 17

15.a. Leaves obovate or cordate, tip rounded, obtuse or emarginate, black or dark-brown above when dry; pedicels ferruginously sericeous, sepals ferruginously on either side. *Luzon* . . . . 8. **X. parvifolia** (A. DC) van Royen

b. Leaves spatulate or elliptic 16

16.a. Sepals 2.3—4 by 1—1.5 mm, corolla 4—5 mm, anthers with one acute tip. *Siam* 7. **X. siamensis** (Fletcher) van Royen

b. Sepals 5—5.5 by 2—2.5 mm, corolla 10—14 mm, anthers with two acute tips. *Hainan* . . . . 14. **X. embeliifolia** (Merr.) van Royen

17.a. Spiny trees. *India to Indochina* . . . . 11. **X. tomentosa** (Roxb.) Rafin.

b. No spines present 18

18.a. Petioles 10—30 mm long; pedicels 7—11 mm long. *Burma and Siam* 10. **X. burmanica** (Coll. & Hemsley) van Royen var. **burmanica**

b. Petioles 2—8 mm long; pedicels 2—5 mm long 19

19.a. Staminodes ciliate along the margin 20

b. Staminodes not ciliate along the margin. *Siam* 7. **X. siamensis** (Fletcher) van Royen

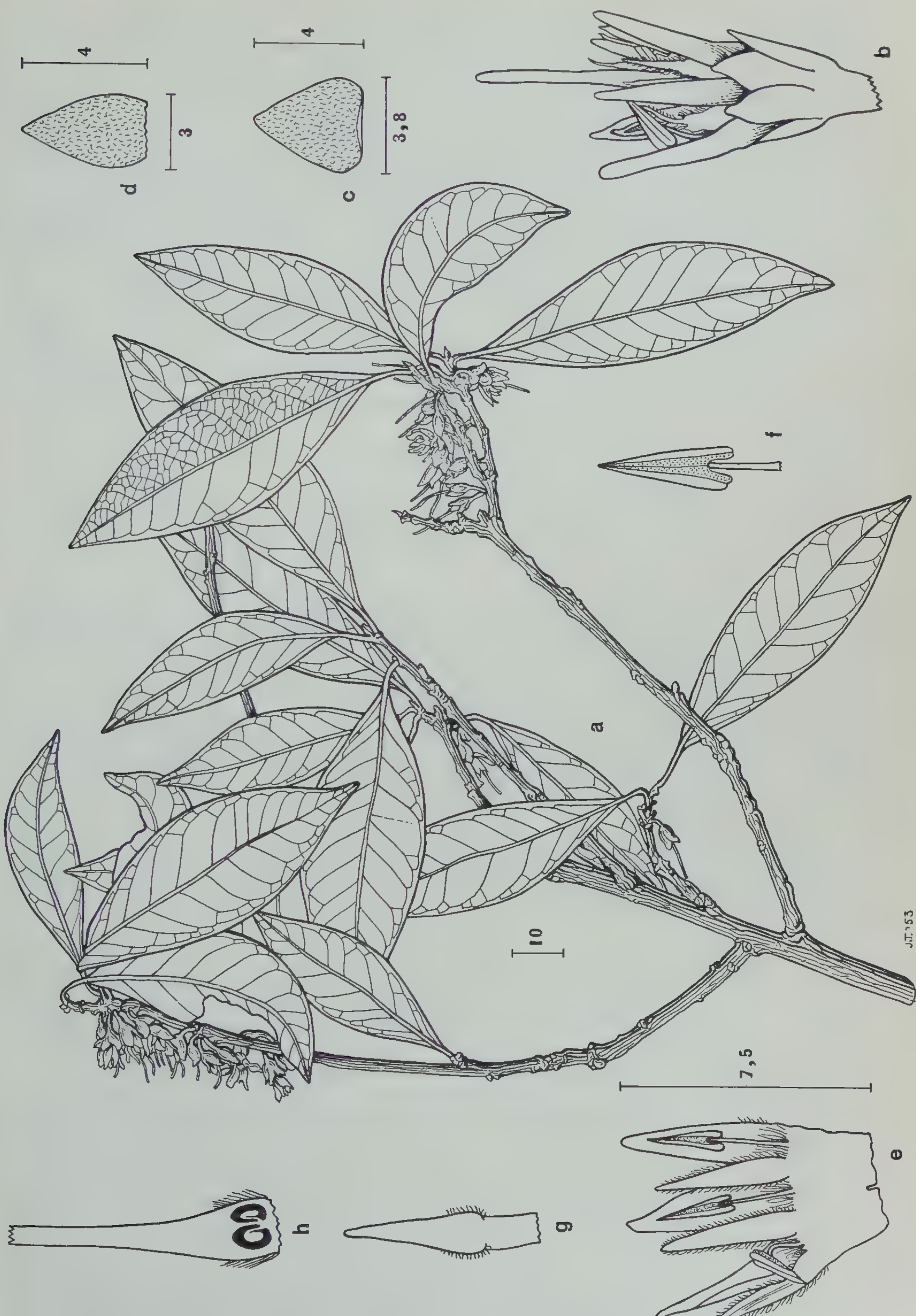
20.a. Fruits ovoïd-ellipsoid, 2—4 by 1.2—2.5 cm; staminodes 2—2.5 mm long, anthers 2—2.5 mm long; branchlets with roundish lenticels. *Siam* 10. **X. burmanica** (Coll. & Hemsley) van Royen var. **lenticellata** (Fletcher) van Royen

b. Fruits globoid or obliquely obovoid, 1—1.5 by 1—1.5 cm; staminodes 4—7.5 mm long, anthers 3—4 mm long; branchlets striate. *Hainan* 14. **X. embeliifolia** (Merr.) van Royen

1. **X. shweliensis** (W. W. Smith) van Royen, nov. comb. — *Sideroxylon shweliense* W. W. Smith, Not. bot. gard. Edinb. 12, 1920, 223 — *Fig. 2.*

Shrubs, 1—2 m. Branchlets terete, 1.5—3 mm in diam., greyish striate, whitish tomentose, glabrescent. *Leaves* lanceolate or elliptic, 5—10 by 1.3—2.5 cm, obtusely or acutely acuminate at the tip, narrowly cuneate at base, tapering into petiole; chartaceous, glabrous, nitidulous above, dull below;

Fig. 2. *X. shweliensis,* a. habit, b. flower, c. inner sepal, inside, d. outer sepal, outside, e. flower, inside, f. stamen, g. corolla-lobe, outside, h. longitudinal section of gynaecium. (from *Forrest 17886).*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midrib flat and prominulous above, prominent below, secondary nerves 9—12, ascending at an angle of 50°—60°, curved or nearly straight, forked near margin and irregularly joined, prominent on either side, tertiary nervation transverse, sometimes sinuous and branched, thus seemingly reticulate, sparse, prominulous on either side; petioles 5—8 mm long, broadly canaliculate above, whitish sericeous when young, soon glabrous. *Flowers* solitary or in few-flowered clusters, pendulous; pedicels terete, 3—4 mm long, whitish sericeous tomentose. *Sepals* ovate or triangular, 3—4 by 2.5—4 mm, obtuse or subacute, brownish tomentose without, glabrous within. *Corolla* creamy-yellow, 7.5—9 mm long, lobes ovate-lanceolate, 5—6 by 2—2.5 mm, obtuse or acute, margins fimbriate-lacerate at base. *Stamens* 4—5 mm long, filaments filiform, 1.5—3 mm long, anthers c. 3 mm long, apex acute, dehiscing extrorsely. *Staminodes* lanceolate, 3—4 by 1—2 mm, apex acute. *Gynaecium* 10—12 mm long; ovary conoid, 5-lobed, brownish-yellowish tomentose; style subulate. *Fruits* not seen, according to Smith ovoid, c. 3 cm long.

Type specimen: *Forrest 17886* in E.

Distr.: China (Yunnan province).

CHINA. Yunnan, western flank of Shweli-Salween divide, 3000—3300 m, in mixed forest in ravines: *Forrest 17886* (E, K), shrub 1.2—2 m, fl. creamy-yellow, May; ibidem: *Forrest 18555* (E), fr. Sept.

Remarks: Unfortunately I have not seen the fruit, but it is on account of the close resemblance of the floral details with those of the other species in *Xantolis* that the above mentioned specimens are considered to belong to that genus.

Regarding leafshape and nervation the present species is related to *X. hookeri* and *X. boniana* but it differs from both in the smaller and narrower leaves and the less distinct tertiary nervation. The number of secondary nerves is intermediate between that of *X. boniana,* var. *boniana* and *X. hookeri,* resp. 5—8, 9—13 and 12—16. *X. boniana,* var. *rostrata* from Hainan has the same number of nerves but from that variety *X. shweliensis* differs by the glabrous inner surface of the sepals. Moreover, *X. shweliensis* is said to be a shrub and *X. boniana* with its varieties are trees.

2. **X. boniana** (Dubard) van Royen, nov. comb. — *Planchonella boniana* Dubard in Lecomte, Not. Syst. 2, 1911, 86 — *Sideroxylon bonianum* (Dubard) Lecomte, Fl. Gén. Indo-Chine 3, 7, 1930, 894 — *Pouteria ? boniana* (Dubard) Baehni, 1942, 368 — *Planchonella laotiana* Dubard, Not. Syst. 2, 1911, 86.

Trees, 5—15 m. Branchlets subterete or compressed in the upper internodes, 1.5—3.5 mm in diam., striate and sometimes lenticellate, ferruginously sericeous, glabrescent. *Leaves* elliptic, ovate or obovate, 6—12 by 2.8—5.5 cm, apex short or long obtusely or acutely acuminate or obtuse at tip, cuneate at base, shortly decurrent, margin waved; subcoriaceous, juvenile ones yellowish-ferruginously woolly on either side, later on glabrous and nitidulous on either side or ferruginously puberulous along the midrib and nerves only; midrib prominulous above, prominent below, secondary nerves 5—13, ascending at an angle of 35°—65°, curved, forked at the tip, archingly joined, sometimes diminishing until inconspicuous, prominulous above, prominent below, tertiary nervation transverse, prominulous above, prominent below; petioles 8—15 mm long, grooved above, ferruginously sericeous but glabrescent. *Flowers* white, solitary or in few-flowered clusters; pedicels terete, 6—10 mm long, ferruginously puberulous, ultimately glabrous. *Sepals* ovate-lanceolate, 4—5.5 by 2—3 mm, apex subacute, margins membranous, whitish appressedly tomentose on either side. *Corolla, stamens* and *staminodes* not seen. *Ovary* globose, 2—3 mm diam., whitish sericeous; style terete, 9—11 mm long. *Fruits* ovoid, 2—4 by 1.5—2.2 cm, one-seeded, glabrous or yellowish tomentose, pericarp woody; seeds fusiform, 2—3 by 0.8—1.5 by 1.3—1.5 cm, obtuse at either end, yellowish brown or brown, nitidous, scar ovate, nearly as long as the seed, up to 5 mm wide, albumen copious, cotyledons foliaceous, radicle 1—2 mm, slender, acute.

Type specimen: *Bon 2899* in P.

Distr.: Indochina and Hainan.

Var. **boniana.**

Secondary nerves 5—8, ascending at an angle of 35°—55°, tertiary nervation rather dense. *Fruits* glabrous.

Type specimen: *Bon 2899* in P.

Vern. name: sao-trai (Tonkin).

Distr.: Indochina.

INDOCHINA. Tonkin, Mt China-Hac, near Vo-xa: *Bon 2899* (L, P), tree, fl. May — Laos, without loc.: *Pavie s.n.* (P).

Remarks: According to Dubard the sepals are said to be glabrous but this is apparently not correct as I found them in the type specimen whitish tomentose on either side.

Though flowers of this species are unknown, there is, on account of the fruits of var. *rostrata* and the close resemblance in leaves and flowers to those of *X. hookeri* no doubt that this species has to be inserted in *Xantolis.*

Var. **rostrata** (Merrill) van Royen, nov. stat. — *Sideroxylon rostratum* Merrill, Phil. Journ. Sc. 21, 1922, 351 — *Planchonella rostrata* (Merrill) H. J. Lam, 1925, 218 — *Pouteria eluviicola* Baehni, 1942, 310.

Secondary nerves 9—13, ascending at an angle of 50°—65°, tertiary nerves rather far apart. Fruits yellowish tomentose, scar of the seed as long as seed itself which is 2—3 cm long.

Type specimen: *McClure 8559* in PNH.

Distr.: Hainan.

HAINAN. Five Finger Mt., wooded ravine at edge of stream: *McClure 8488* (BM, K, L, PNH), tree 10 m, Dec.; ibidem, Yik Tsok Mau, 650 m, wooded ravine: *McClure 8559* (BM, K), tree 5—15 m, fl. white, Dec.; Dung Ka to Diu Mun, along trail, c. 600 m: *Chun & Tso 44270* (K, L), tree 15 m, lvs deep green, fr. deep green, tomentose, Nov.

Var. **pavieana** (Pierre) van Royen, nov. stat. — *Planchonella pavieana* Pierre in Lecomte, Not. Syst. 2, 1913, 88 — *Pouteria ? pavieana* (Pierre) Baehni, 1942, 417.

Secondary nerves 9—13, ascending at an angle of 50°—65°, tertiary nerves few. Fruits yellowish tomentose; scar of the seed c. $^2/_3$ the length of seed itself, which is up to 2 cm long.

Type specimen: *Pavie s.n.* in P.
Vern. names: haï, môi pang (muong).
Distr.: Indochina.

INDOCHINA. Laos: Luang Prabang: *Pavie s.n.* (P), with seeds only, fr. edible.

Remarks: *Planchonella pavieana* is regarded here as a variety of *X. boniana* as the differences though distinct are very slight. It differs from var. *rostrata* in the slightly narrower leaves but this may be illusory when more material is present and therefore is not regarded as an important detail. Also it is possible that var. *rostrata* and var. *pavieana* should be united when more material is found. An additional reason to keep them apart, is the difference in geographical distribution, var. *rostrata* being known from Hainan only and var. *pavieana* being restricted to Laos.

3. **X. hookeri** (Clarke) van Royen, nov. comb. — *Sideroxylon hookeri* Clarke in Hooker, Fl. Br. India 3, 1882, 537; Lecomte, Fl. Gén. Indo-Chine 3, 7, 1930, 893; Kanjilal & Das, Fl. Assam 3, 1939, 191 — *Planchonella hookeri* (Clarke) Pierre, Not. bot. Sapot., 1890, 36 — *? Sideroxylon hookeri* Clarke, var. *mekongense* Lecomte, l. c. 893 — *Pouteria hookeri* (Clarke) Baehni, 1942, 366.

Trees, up to 12 m. Branchlets subterete but compressed below the nodes, 2—5 mm in diam., striate, ferruginously tomentose when young, older ones glabrous and yellowish. *Leaves* elliptic, oblong or subobovate, 12—22 by 4—6 cm, tip long acuminate, narrowing towards base and sometimes oblique, shortly decurrent; margin undulate; membranous to chartaceous, glabrous above, ferruginously tomentose below but glabrescent except for a few scattered hairs along midrib, nitidulous above, dullish below; midrib prominulous above, prominent below, secondary nerves 10—16 and 5—8 towards the tip closer together, ascending at an angle of 50°—60°, in the tip 70°, curved, but the apical ones straight, diminishing until inconspicuous, prominulous or subimpressed above, prominent below, tertiary nerves transverse, prominulous on either side; petioles 1—2 cm, broadly canaliculate above, rounded below, whitish-ferruginously appressedly tomentose, glabrescent. *Flowers* solitary or in few-flowered clusters; pedicels terete, but angular in the apical part, 5—9 mm long, ferruginously whitish tomentose. *Sepals* ovate, 2.5—4.5 by 1.5—3.5 mm, apex subobtuse, greyish ferruginously sericeous without, ferruginously sericeous within, inner sepals with sparsely fimbriate and membranous margin. *Corolla* 8—12 mm, lobes ovate-lanceolate, 7—9 by 2.5—3.5 mm, margins lacerate at base. *Stamens* 6—7 mm long, filaments subulate, compressed, 3—5 mm, anthers ovoid, 2—3.5 mm long, apex truncate, mucronulate, dehiscing extrorsely or laterally. *Staminodes* lanceolate or linear, 6—7 by 1—2 mm, apex acute. *Gynaecium* long conoid, 10—15 mm long, ovary ferruginously hirsute; style filiform, 10—12 mm long, subcapitate. *Fruits* unknown.

Type specimen: *Hooker 4* in K.
Vern. names: dieng-soh-pho-shree; monkey's crab-apple.
Distr.: Northern parts of India and Indochina.

INDIA. Sikkim: without loc., alt. c. 1500 m: *Hooker 4* (BM, K, L), fl.
INDOCHINA. Laos: Vieu Chang: *Thorel s.n.* (P), fl.

Remarks: Closely related to this species is *X. racemosa* which differs, however, in the type of inflorescence. *X. racemosa* carries flowers in clusters along an axillary shoot, while in *X. hookeri* the flowers are axillary and clustered. Moreover, the latter has longer acuminate leaves and larger flowers.

The details of var. *mekongense* as described by Lecomte fall within the limits of var. *hookeri* so that it seems justified to unite both varieties. However, var. *hookeri* is known only from Sikkim and var. *mekongense* from Laos, no intermediate localities having so far been reported.

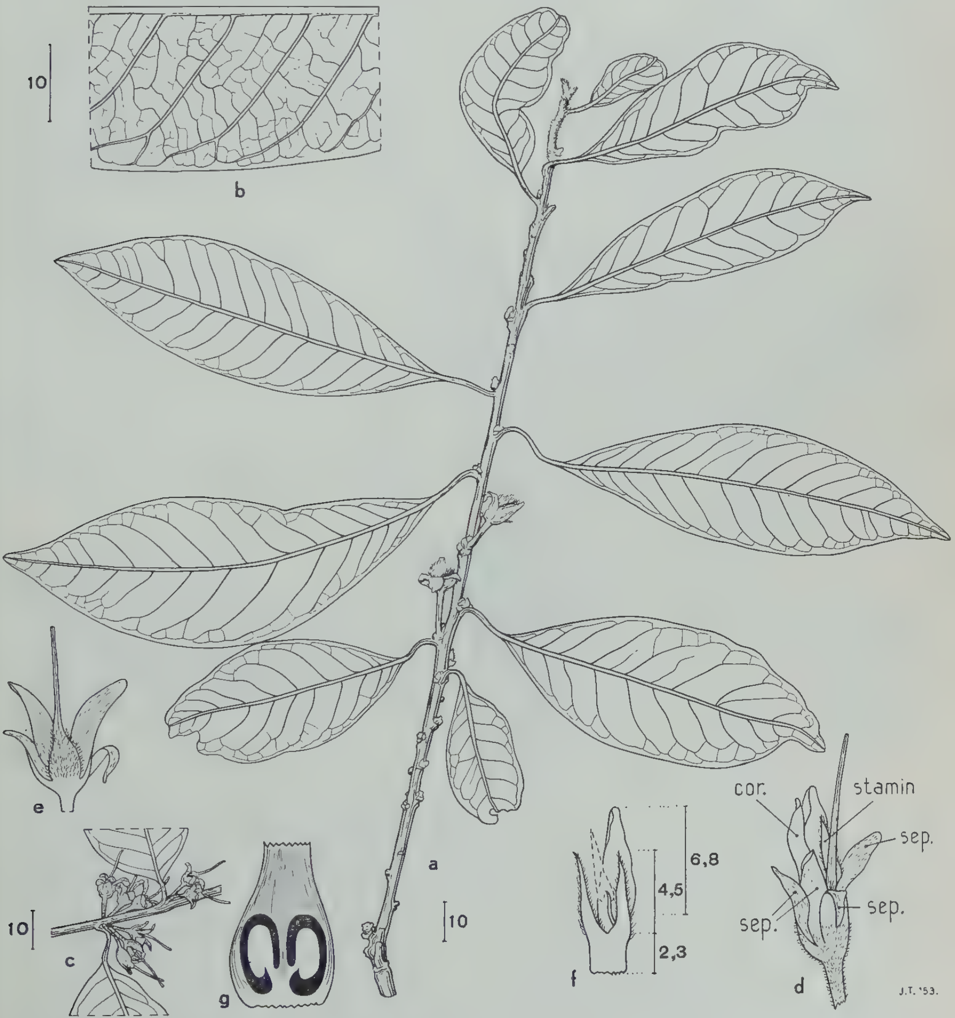

Fig. 3. *X. stenosepala,* a. branch with 2 juvenile fruits, b. part of leaf, c. flowers, d. flower (sep. sepals, cor. corolla, stamin. staminodes), e. juvenile fruit with part of calyx, f. inside of part of corolla, anther drawn in broken line, g. longitudinal section of basal part of gynaecium (from *Wang 75088*).

4. X. stenosepala (Hu) van Royen, nov. comb. — *Adinandra stenosepala* Hu, Bull. Fan. Mem. Inst. Biol., Bot. Ser. 8, 1938, 148 — *Planchonella stenosepala* (Hu), Hu, Bull. Fan Mem. Inst. Biol., Bot. Ser. 10, 1940, 129 — *Fig. 3.*

Trees, 6—15 m. Branchlets angular, 2—4 mm in diam., greyish or yellowish brownish tomentulose, glabrescent. *Leaves* lanceolate, oblanceolate or oblong-lanceolate, 5—18 by 2—5 cm, acuminate, acumen 3—8 mm long, base cuneate, tapering into petiole; coriaceous, greyish puberulous, glabrescent, nitidous above, dull below; midrib prominulous above, prominent below, secondary nerves 15—17, ascending at an angle of 40°—55°, slightly curved, archingly joined by thickened nerves, prominulous above, prominent below, tertiary nervation sparse, transverse, recurved near the midrib, prominulous above, prominent below, petioles 8—18 mm long, broadly canaliculate above, greyish tomentose, glabrescent. *Flowers* solitary or in few-flowered axillary clusters; pedicels terete, 6—10 mm long, greyish sericeous. *Sepals* lanceolate, 5—7 by 2—3 mm, acute at apex, greyish sericeous without, ferruginously sericeous within. *Corolla*-lobes lanceolate, up to 6.5 by c. 2 mm, greenish black, apex acute. *Stamens* up to 6.5 mm long, filaments subulate, thickened at base, slightly shorter than the anthers, the latter lanceolate, sagittate at base, acute and with a slightly produced connective at apex, dehiscing introrsely, c. 2.5 mm long. *Staminodes* ovate-lanceolate, up to 4 mm long, caudate-subulate at apex, densely tomentose along margin, glabrous within. *Ovary* without disk, ovoid, c. 3 by 3 mm, densely ferruginously tomentose, 5-celled, with one basal ovule in each cell; style simple, up to 12 mm long, villous at base, glabrous in the upper part, stigma obscurely lobed. *Fruits* yellow, oblong-ovoid, up to 1.5 by 1 cm, crowned by the up to 15 mm long style, ferruginously sericeous to pilose, pericarp ligneous.

Type specimen: *Wang 75088* in FM.

Distr.: China (Southwestern Yunnan).

CHINA. Yunnan, Nanchiao Hsien, in forest, 1420 m: *Wang 75088* (FM, K), tree c. 13 m, fr. June, yellow; Fo-Hai Hsien, in mixed forests, 1530 m: *Wang 73529* (A, FM), tree c. 15 m, fl. May; ibidem, 1400 m: *Wang 77205* (A, FM), July; ibidem, 1300 m: *Wang 77042* (A, FM), tree 8 m, July; ibidem, in thickets, 1540 m: *Wang 74441* (FM), tree c. 6 m, June; ibidem, in mixed forests, 1400 m: *Wang 77109* (A, FM), tree 6 m, June; ibidem, in thickets, 1540 m: *Wang 73977* (A, FM), tree c. 6 m, May; Nan-Chiao Hsien, in forests in ravine, 1450 m: *Wang 75394* (FM), tree 10 m, June.

5. X. racemosa (Dubard) van Royen, nov. comb. — *Planchonella racemosa* Dubard, 1912, 55, *nomen*; Dubard in Lecomte, Not. Syst. 2, 1913, 88, *descr.* — *Sideroxylon racemosum* Lecomte, Fl. Gén. Indo-Chine 3, 7, 1930, 888; Baehni, 1942, 428 — *Sideroxylon racemosum* Lecomte, var. *subracemosum* Lecomte, l. c. 889 — *Mastichodendron racemosum* (Lec.) H. J. Lam, Rec. trav. bot. néerl. 36, 1939, 521 — *Sideroxylon eburneum* Chevalier in Lecomte, l. c. 1930, 895 — *Fig. 4.*

Trees. Branchlets stout, terete or angular, 2—5 mm in diam., with numerous lenticels, ferruginously pubescent, glabrescent. *Leaves* obovate or obovate-oblong, 12—22 by 4.5—7 cm, apex obtusely acuminate (acumen up to 10 mm long), cuneate at base, tapering into petiole; margin undulate; subcoriaceous, glabrous on either side, nitidulous above, dullish

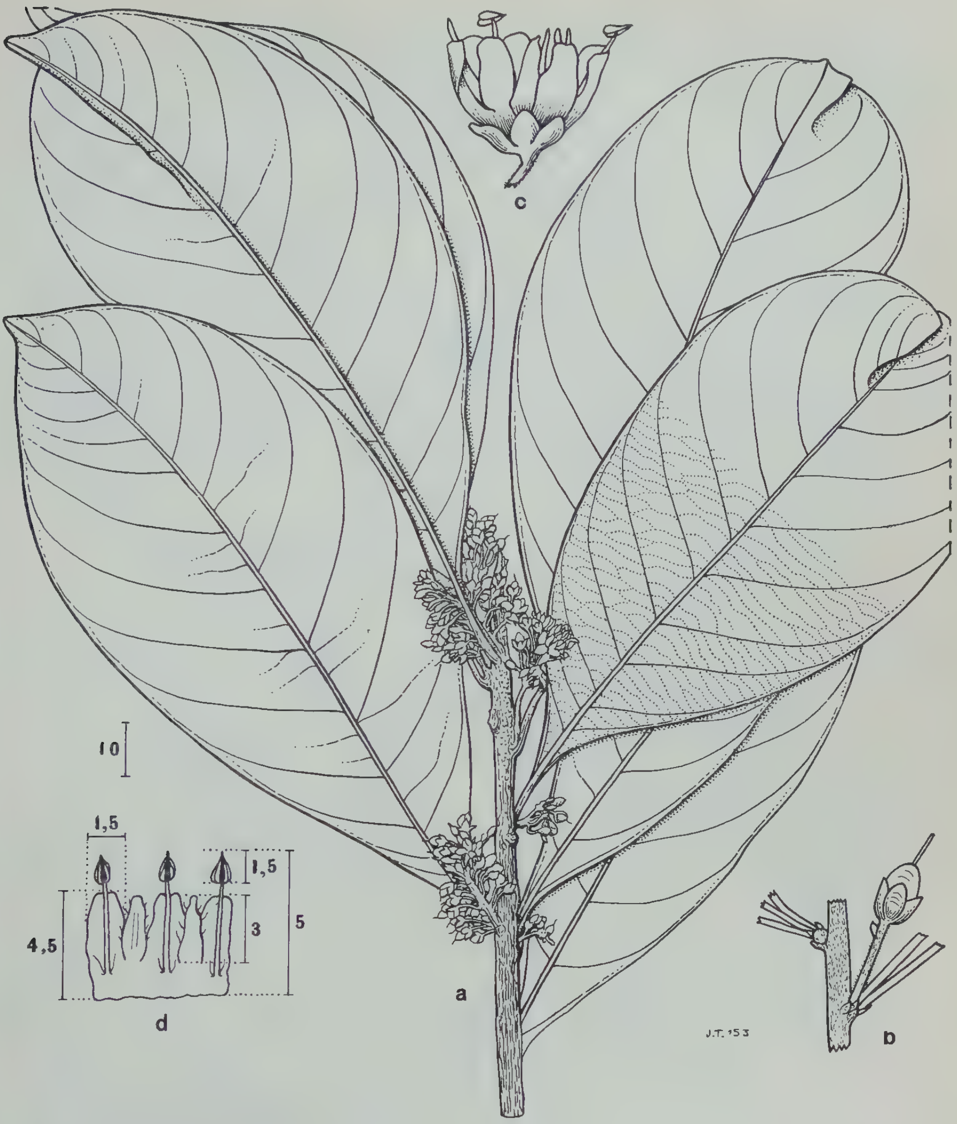

Fig. 4. *X. racemosa*, a. habit, b. juvenile fruit, c. flower, d. corolla, inside. (from *Bon 4266*).

below; midrib impressed above, prominent below, secondary nerves 8—13, ascending at an angle of 45°—65°, curved, diminishing until inconspicuous, prominulous above, prominent below, tertiary nerves transverse, prominulous above, prominent below; petioles 10—17 mm long, flat or broadly grooved above and sometimes minutely crested, glabrous. *Flowers* solitary or in clusters along 7—30 mm long axillary shoots, in the axils of triangular,

c. 1 mm long, obtuse, ferruginously tomentose bracts, peduncle compressed, 2—5 mm long, appressedly whitish tomentose, rachis appressedly tomentose, with numerous white lenticels; pedicels terete or subangular, 4—6 mm long, sparsely ferruginously or whitish tomentose, at base with 2 lanceolate, acute, c. 0.5 mm long bracteoles, and sometimes also an additional lanceolate or linear, scale-like, 1—1.5 mm long one closely below the sepals. *Sepals* ovate, 1.5—2.8 by 1.5—2 mm, apex obtuse, glabrous without, glabrous or subglabrous within. *Corolla* whitish or yellowish, 4—5 mm long, lobes elliptic or oblong, 2.5—3.5 by 1—1.5 mm, apex truncate, tips often crenulate, auriculate at base. *Stamens* 4.5—5.5 mm long, filaments subulate, 3—3.5 mm, anthers ovoid, 1.2—1.5 mm long, apex acute, dehiscing extrorsely. *Staminodes* ovate, 2—3.5 by 1—2 mm, apex obtuse or acute, attenuate and auriculate at base, margins sparsely and irregularly fimbriate. *Ovary* ovoid, 5—7-lobed, stout, 1 mm high and diam., glabrous except for a few long hairs at base; style subulate, 3—3.5 mm long. *Fruits* ovoid, 16—18 mm long, 1-seeded; seeds ellipsoid oblong, albumen present, scar unknown, cotyledons thin, radicle 2.5 mm long.

Lectotype specimen: *Bon 5220* in P.

Vern. name: mai-lai-duoi (= ivory wood) (Annam).

Use: Provides one of the best timbers of northern Annam.

Distr.: Indochina.

INDOCHINA. Tonkin, Mt Câ: *Bon 4266* (P), fl.; Phú Dien: *Bon 5220* (P), fl. March; Cho-ganh: *Pételot s.n.* (P), fl. & fr.; Ké-só, on limestone rocks: *Balansa 4337* (K, P), fl. May — Annam, Thanh-hoa prov., Nhu-Xuân: *Caday 38268* (P), fl. April.

Remarks: Dubard in his original description mentioned 3 specimens; it is here proposed to select *Bon 5220* as the lectotype specimen.

The details of the fruit are extracted from Lecomte's description as I have not seen the material.

Lecomte distinguished a variety *subracemosum* on account of the very short racemes but this seems hardly justified as in *Bon 4266* an even shorter raceme was found beside the 2—3 cm long inflorescences. In the type specimen of var. *subracemosum* (*Balansa 4337*) the inflorescence is 2—5 mm long.

6. **X. baranense** (Lec.) van Royen, nov. comb. — *Sideroxylon baranense* Lec., Fl. Gén. Indo-Chine 3, 7, 1930, 889—890 — *Fig. 5.*

Trees, 9—10 m. Branchlets terete, 1—4 mm in diam., with numerous round lenticels, glabrous. *Leaves* scattered, obovate or elliptic, (1.3—)2.5—4.5 by (0.8—)1.2—3 cm, apex rounded, entire, retuse or acutely or obtusely acuminate (acumen 1—2.5 mm), base attenuate and decurrent; subcoriaceous, glabrous on either side, greyish nitidous above, greenish dull below; midrib flat or prominulous above, prominent below, secondary nerves 7—10, ascending at an angle of 55°—65°, straight, irregularly archingly joined, prominulous on either side, but more conspicuous above, tertiary nerves reticulate-parallel to secondary ones, prominulous on either side, but more

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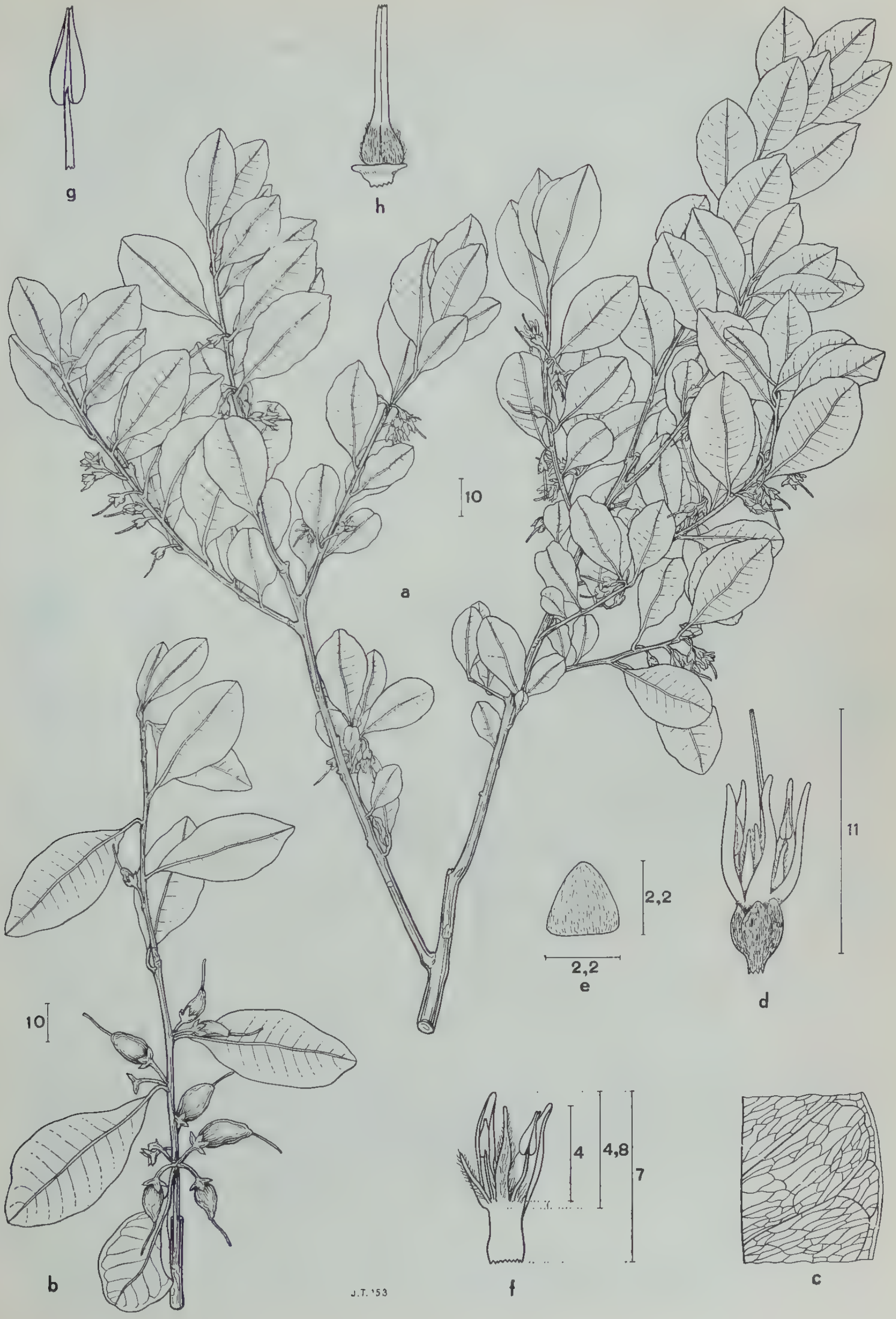
Fig. 5. *X. baranense,* a. flowering specimen, b. fruiting specimen, c. part of leaf, d. flower, e. sepal, outside, f. corolla, inside, g. stamen, h. gynaecium. (b. from *Poilane 9721,* the rest from *Poilane 9718*).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conspicuous above; petioles 1—4 mm long, grooved above, rounded below, whitish sericeous. *Flowers* golden-yellow, fragrant, solitary or in few-flowered clusters, pendulous; pedicels angular, 4—6 mm long, whitish sericeous. *Sepals* ovate-triangular, 2—3 by 2—2.5 mm, apex obtuse or subacute, whitish sericeous without, glabrous within, inner sepals with membranous margin which is narrowed at base. *Corolla* 6—8 mm long, lobes lanceolate, 4—5.5 by 1.5—2 mm, apex obtuse, whitish tomentose at base. *Stamens* 4—5 mm, filaments subulate, 2.5—3.5 mm long, anthers sagittate, 2—2.5 mm long, with two short acute tips, dehiscing extrorsely. *Staminodes* lanceolate, 3.5—4.5 mm, apex aristate with a membranous aristum, densely ferruginously tomentose on either side. *Ovary* ovoid-globose, c. 1.5—2 mm, 5-lobed, ferruginously tomentose; style long exsert, terete to angular, 7—9 mm long. *Fruits* known in a young state only, ovoid or ellipsoid, sometimes slightly oblique, 8—15 by 4—6 mm, 2—3-seeded, whitish sericeous, style marcescent, up to 10 mm, pericarp fleshy; seeds not seen, but according to Lecomte 7 mm long, 3.5 mm wide, with a linear scar.

Type specimen: *Poilane 9721* in P.

Vern. name: dau libô (Moï).

Distr.: Indochina.

INDOCHINA. Annam, prov. Phanrang, Baran: *Poilane 9718* (P), fl.; ibidem: *Poilane 9721* (P), fr.

7. **X. siamensis** (Fletcher) van Royen, nov. comb. — *Planchonella siamensis* Fletcher, Kew Bull. 1937, 1938, 373—374 — *Pouteria ? siamensis* (Fletcher) Baehni, 1942, 372 — *Fig. 6*.

Trees, c. 12 m. Branchlets terete or angular, 1—3 mm in diam., striate, glabrous. *Leaves* spatulate or elliptic, sometimes rhomboid-oblong, 2—3.5 by (0.6—)1—2 cm, tip obtuse, mucronulate, base tapering into petiole; margins slightly involute; coriaceous, nitidulous above, dull below; midrib not or slightly prominent above, prominent below, secondary nerves 5—10, ascending at an angle of 40°—45°, straight, forked at their tips, not or indistinctly joined by tertiary nerves, sometimes irregularly archingly joined, prominulous above, prominent below, tertiary nerves laxly reticulate, sometimes one nerve more distinct and parallel to the secondary ones, inconspicuous, more distinct above than below; petioles 2—4 mm long, flat above, rounded below, glabrous. *Flowers* white, in few-flowered clusters, sometimes along foliate brachyblasts; pedicels terete or angular, 3—4 mm long, whitish puberulous. *Sepals* ovate or lanceolate, 2.3—4 by 1—1.5 mm, apex obtuse, greyish puberulous tomentose on either side, inner sepals with membranous margin. *Corolla* white, 4—5 mm long, lobes lanceolate, 3—3.5 by 1—1.5 mm, apex obtuse or subacute. *Stamens* 2.5—4 mm long, filaments subulate, 1.5—2 mm long, anthers sagittate, c. 2 mm long, apex obtuse, apiculate, dehiscing laterally. *Staminodes* lanceolate-aristate, 2—3 mm long, entire with margins. *Ovary* globose, c. 2 mm in diam., 4-celled, densely yellowish-whitish tomentose; style subulate, 3—4 mm, hirsute at base. *Fruits* unknown.

Type specimen: *Kerr 10124* in K.

Vern. name: tan sian (Siam).

Distr.: Siam.

Siam. Kanburi, c. 50 m, open scrub: *Kerr 10124* (K, L), tree c. 12 m, fl. white, Jan.

Remarks: In *X. siamensis* and *X. parvifolia* the flowers are sometimes borne along brachyblasts though in *X. siamensis* this phenomenon is less distinct than in *X. parvifolia.* Not only do the two species resemble each other in these dwarf shoots with numerous leaf scars, with a few leaves and with clusters of flowers, but also in the shape of their leaves which is obovate or spatulate. However, they are also to distinguish from each other in the shape of the leaves, those of *X. parvifolia* being obovate or cordate, those of *X. siamensis* being spatulate to elliptic. The pedicels in *X. parvifolia* are ferruginously sericeous and in *X. siamensis* whitish puberulous. It is on account of the resemblance stated that *X. siamensis* is included in this genus.

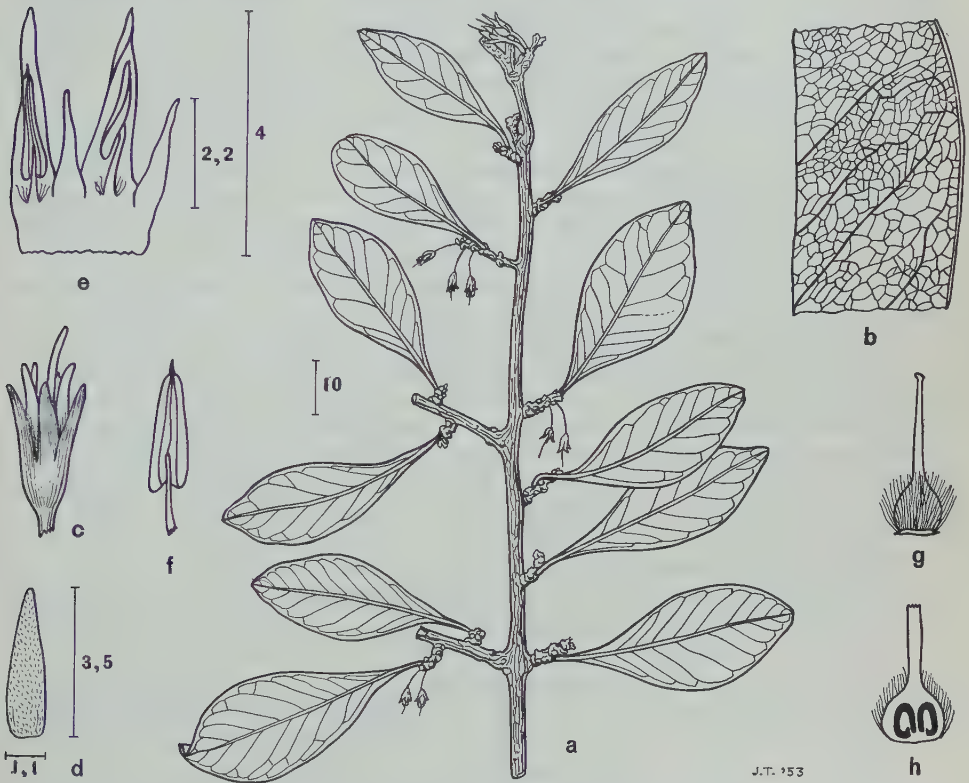


Fig. 6. *X. siamensis*, a. habit, b. part of leaf, c. flower, d. sepal, outside, e. corolla, inside, f. stamen, g. gynaecium, h. longitudinal section of gynaecium. (from *Kerr 10124*).

8. **X. parvifolia** (A. DC) van Royen, nov. comb. — *Sapota parvifolia* A. DC, Prodr. 8, 1844, 175 — *Planchonella parvifolia* (A. DC) Pierre, Not. bot. Sapot., 1890, 36; Dubard, 1912, 55; Lam, 1925, 199—200; Lam, 1927,

467 — *Sideroxylon parvifolium* (A. DC) F.-Vill. in Blanco, Fl. Filip., Novis App. 1880, 124; Vidal, Phan. Cum. Phil., 1885, 124; idem, Rev. Pl. Vasc. Filip., 1886, 176; Merrill, Enum. Ph. Fl. Pl. 3, 1923, 286 — *Pouteria parvifolia* (A. DC) Baehni, 1942, 373.

Small trees, sometimes with up to 3.5 cm long spines. Branchlets terete, 1—4 mm in diam., striate, ferruginously appressedly puberulous, glabrescent. *Leaves* conferted at tips of 1—10 mm long brachyblasts, obovate or obcordate, 2—5.5 by 0.8—2.5 cm, rounded, obtuse or emarginate at apex, tapering towards base and decurrent; membranous or coriaceous, glabrous on either side, nitidulous above, dull below; midrib prominulous above, prominent below, secondary nerves 7—10, ascending at an angle of (40°—)50°—65°, straight, sometimes sinuous, forked at their tips, irregularly archingly joined, prominulous and inconspicuous on either side, tertiary nerves laxly reticulate, prominulous on either side; petioles 2—6 mm long, canaliculate above, rounded below, glabrous. *Flowers* solitary or in clusters at tips of brachyblasts; pedicels subterete or angular, 3—6 mm long, ferruginously sericeous. *Sepals* ovate, 3.5—4 by c. 2 mm, apex obtuse or acute, ferruginously sericeous on either side, often curved outwards. *Corolla* 6—9 mm long, lobes lanceolate, 5—6 by c. 1.5 mm, apex obtuse or acute. *Stamens* 4—5 mm long, filaments subulate, 1.5—2 mm, anthers sagittate, 2.5—3.5 mm long, apex cuspidate, dehiscing laterally. *Staminodes* lanceolate, c. 3 mm long, apex acuminate, margins coarsely lacerate or fimbriate. *Ovary* ovoid, 1—1.5 by 1—1.5 mm, 5-lobed, ferruginously tomentose; style filiform, 9—12 mm long. *Fruits* globose, 1.5—2.2 cm diam., 1- or 2-seeded, black, glabrous, pericarp thick, fleshy; seeds ovoid, 8—9 by c. 7 mm, apiculate at the top, brown, nitidous, scar linear, nearly as long as the seed, 1—2 mm wide, brownish, dull, albumen copious, cotyledons foliaceous, radicle cylindrical, c. 1 mm.

Type specimen: *Cuming 1147* in G.-Boiss.

Vern. names: auanagin (Ilocos); kalunañgin (Ilocos); manzánas-gúbat (Tagban), bu úl (Mindoro).

Distr.: Luzon and Mindoro.

LUZON. Prov. Ilocos Norte (f. Merrill, 1923); prov. Ilocos Sur, without loc.: *Cuming 1147* (FI, G.-Boiss., L, P, SING), fl.; prov. Pangasinan, Santiago Isl.: *Clemens 18198* (SING), March; prov. Batangas, without loc.: *Ramos 1925* (NSW, PNH, SING), fr. Aug.

MINDORO. Mt Yagaw: *Conklin PNH 19335* (L, PNH), Dec.

Remarks: Seeds have become known for the first time by the NSW specimen of *Ramos 1925*.

9. **X. maritima** (Pierre) van Royen, nov. comb. — *Planchonella maritima* Pierre, Not. bot. Sapot., 1890, 36, *nomen*; Pierre in Dubard in Lecomte, Not. Syst. 2, 1911, 87, *descr.*; Dubard, 1912, 54 — *Sideroxylon maritimum* Pierre, l. c. 1890, 36, *nomen*; Pierre in Dubard in Lecomte, Fl. Gén. Indo-Chine, 3, 7, 1930, 889, f. 97, *descr.* — *Pouteria maritima* (Pierre) Baehni, 1942, 371.

Trees or shrubs, sometimes creeping, 7—8 m, spiny. Branchlets terete, 1—3 mm in diam., striate, appressedly whitish or greyish tomentose, glabrescent, with numerous, 3—30 mm long, greyish or blackish, terete and acute spines. *Leaves* suborbicular or broadly obovate, 1.2—3 by 0.8—2.5 cm, tip rounded or short obtusely to subacutely acuminate, sometimes shortly mucronate, base attenuate; subcoriaceous, sometimes ferruginously tomentose when young, glabrescent, nitidous above, dull below; midrib prominulous or impressed above, prominent below, secondary nerves 3—6, ascending at an angle of 60°—70°, straight or slightly curved, irregularly archingly joined, prominulous or subcanaliculate above, prominulous below, tertiary nerves reticulate, nearly invisible and prominulous or impressed above, invisible below; petioles 2—6 mm long, concave or canaliculate above, rounded below, glabrous. *Flowers* in few-flowered clusters; pedicels terete or subangular, 4—8 mm long, greyish or ferruginously sericeous. Outer *sepals* orbicular-ovate, 2.5—3 by 2—2.5 mm, apex subacute, subcarinate without in the apical part, ferruginously sericeous on either side, inner sepals ovate-lanceolate, shorter and narrower than outer ones, ferruginously sericeous on either side. *Corolla* 3.5—5 mm long, lobes spatulate, ovate or ovate-oblong, 2.5—3.5 by c. 1.5 mm, apex obtuse or subacute. *Stamens* 2.5—3 mm, filaments subulate, 1—1.5 mm long, anthers ovoid or oblong-triangular, 2—2.5 mm long, apex acuminate and subacute, truncate or mucronate, dehiscing extrorsely or laterally. *Staminodes* triangular-linear, 2.5—3 mm long, apex acute or aristate, sometimes with one lateral tooth. *Ovary* globose-ovoid, c. 1 mm in diam., 5-lobed, ferruginously tomentose; style 5-ribbed, 4—5 mm long, stigma slightly capitate. *Fruits* ovoid, sometimes oblique, up to 12 mm long and diam., crowned by a 9—10 mm long remnant of the style in the juvenile fruit, mature fruit mucronate only, 1- or 2-seeded, greyish puberulous, black, pericarp chartaceous; seeds irregularly ovoid, compressed, up to 10 mm long, brown, nitidous, scar linear, nearly as long as the seed, c. 1.5 mm wide.

Type specimen: *Pierre 3276* in P.

Vern. names: gang-gay (Annam); cây ma duong (Annam).

Use: On account of its spines this plant is used for hedges. The fruit is edible and the fragrant flowers are sometimes used for ornamental purposes.

Distr.: Indochina.

INDOCHINA. Annam, Nha-trang: *Chevalier, Robinson, Poilane* (f. Lecomte, 1930); Tourane, in dunes: *J. & M. S. Clemens 3317* (K), low shrub, fl. & fr. May—July; prov. Barria, along the sea: *Pierre 3276* (P), fl.

Remarks: The description of the fruit is partly extracted from Lecomte, 1930, as I did not see complete material.

10. X. burmanica (Coll. & Hemsl.) van Royen, nov. comb. — *Sideroxylon burmanicum* Collett & Hemsley, J. Linn. Soc. 28, 1891, 82 — *Planchonella burmanica* (Coll. & Hemsl.) H. J. Lam, 1925, 267 — *Pouteria ? burmanica* (Coll. & Hemsl.) Baehni, 1942, 367 — *Planchonella punctata* Fletcher, Kew Bull. 1937, 1938, 372 — *Pouteria ? punctata* (Fletcher) Baehni, 1942, 369—370.

Trees, 5—20 m. Branchlets terete to compressed, slightly thickened below the nodes, 1.5—4 mm in diam., sparsely hairy, glabrescent. *Leaves* elliptic to obovate, 4.5—16 by 2—6.5 cm, rounded to shortly obtusely acuminate at apex, cuneate at base, short or long decurrent; margin subinvolute; chartaceous or coriaceous, juvenile leaves whitish sericeous, mature ones glabrous on either side, nitidulous above, lighter and dull to nitidulous below; midrib prominulous above, sometimes shallowly sulcate, prominent below, secondary nerves 9—16, ascending at an angle of 50°—70° (45° in basal part), straight, slightly curved near margin, archingly joined, prominent on either side, tertiary nerves laxly reticulate, often one nerve more distinct and subparallel to the secondary nerves, inconspicuous or prominent above, prominulous or prominent below; petioles (0.4—0.8—)1—3 cm long, flat above and sometimes canaliculate, glabrous, rarely with a few scattered hairs. *Flowers* solitary or in few-flowered clusters; pedicels terete, (2—4—)7—11 mm long, whitish or greyish appressedly tomentose. *Sepals* ovate or lanceolate, 3—7 by 2.5—4 mm, apex obtuse, subacute or acute, sometimes subcarinate, greyish tomentose without, ferruginously sericeous within. *Corolla* white, 6—10 mm long, lobes lanceolate or oblong, 4—5.5 by 2—2.5 mm, apex obtuse. *Stamens* 4.5—5.5 mm long, filaments subulate, 1.5—2.5 mm long, anthers sagittate, (2—2.5—)3—4 mm long, apex with a long narrow, acute acumen, dehiscing extrorsely. *Staminodes* ovate or lanceolate or subrotundate, (2—2.5—)4.5—7 mm long, apex aristate, often sinuously bent. *Ovary* conoid-ovoid, 5-lobed, (1.5—2—)5 by 1—2 mm, brownish tomentose; style linear, 7—10 mm long, 5-ribbed, capitate. *Fruits* known in var. *burmanica* only.

Type specimen: *Collett 740* in K.

Distr.: Burma and Siam.

Var. **burmanica.**

Branchlets with few linear lenticels. *Leaves* decurrent over a long distance along petiole, petioles 10—30 mm long. *Flowers* 5—7 in each cluster; pedicels 7—11 mm long. *Staminodes* 4.5—7 mm long. *Anthers* 3—4 mm long. *Fruits* ovoid-ellipsoid, 2—4 by 1.2—2.5 cm, apex obtuse or acute, 1- or 2-seeded, sometimes crowned by a small remnant of the style, black, ferruginously or yellowish puberulous or sericeous, glabrescent, pericarp thick, fleshy; seeds compressed ellipsoid, sometimes oblique, 1.5—2.2 by 0.8—1 by 0.5—0.7 cm, obtuse at either end, brown or yellow, nitidous, with a small wart over the scar, scar as long as seed, 4—8 mm wide, white or light brown, albumen copious, cotyledons foliaceous, radicle curved, 1—2 mm, obtuse.

Type specimen: *Collett 740* in K.

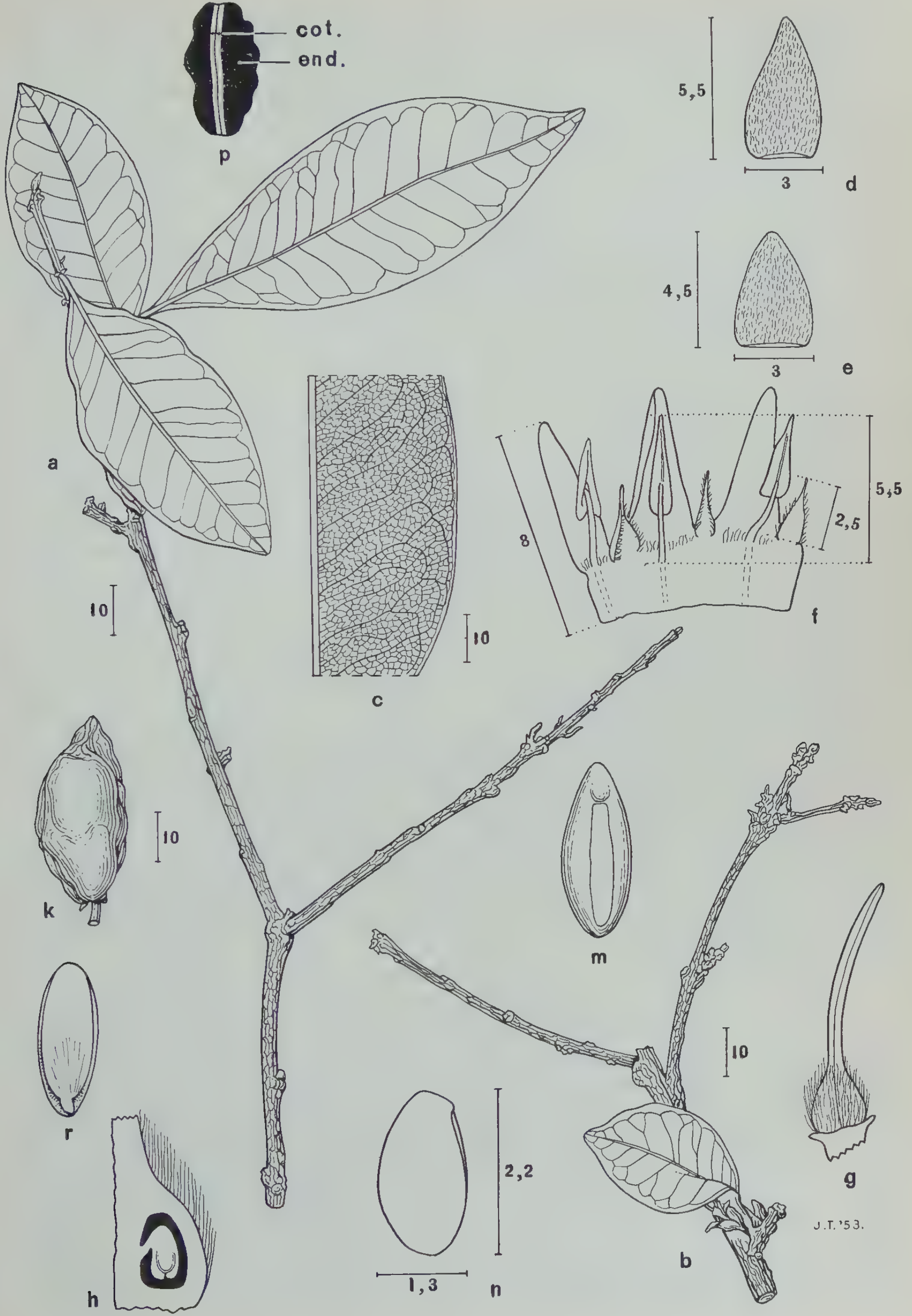
Vern. names: tān sion (Siam); nom prāsī (Siam).

Distr.: Burma and Siam.

BURMA. Shan hills, Jiwangan, alt. c. 1300 m: *Collett 740* (K), fl. May; Ruby mines district, Kyaukclebeni to Shwenyaungbiu: *Lace 5987* (K), fr. Oct.; Maymyo plateau, alt. c. 1100 m: *Lace 6241* (K), fr. June.

SIAM. Hue Nam Mar, Dar Sui, alt. c. 600 m, savannah forest: *Kerr 5809* (K), tree 15 m, fl. white, April; Jap Sai, Chantabun, alt. c. 100 m: *Kerr 9602* (K), spreading tree c. 10 m, fr. Dec.; Samông, Chieng mai, alt. c. 600 m, mixed deciduous forest: *Kerr 6392* (K), tree c. 20 m, fl. Oct.

Fig. 7. *X. burmanica*, var. *lenticellata*, a. habit, b. habit, c. part of leaf, d. outer sepal, outside, e. inner sepal, outside, f. part of corolla, inside, g. gynaecium, h. longitudinal section of ovary, k. fruit, m. seed showing the scar, n. seed, p. transverse section of embryo, r. longitudinal section of embryo. (from *Kerr 5555*).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Remarks: The fruit of var. *burmanica* has been described from *Lace 6241* for the juvenile and from *Lace 5987* for the mature state.

Planchonella punctata is regarded as conspecific with *X. burmanica* var. *burmanica* since the sole difference, the minutely punctate lower surface of the leaves, can not be considered sufficient to maintain it as a distinct species.

Var. **lenticellata** (Fletcher) van Royen, nov. stat. — *Planchonella lenticellata* Fletcher, Kew Bull. 1937, 1938, 371—372 — *Pouteria ? lenticellata* (Fletcher) Baehni, 1942, 367 — *Fig. 7.*

Branchlets with numerous roundish lenticels. *Leaves* shortly decurrent along petiole, the latter 4—8 mm long. *Flowers* solitary or 2—4 in a cluster; pedicel 2—4 mm long; *staminodes* 2—2.5 mm long, *anthers* 2—2.5 mm long.

Type specimen: *Kerr 5555* in K.

Vern. name: ma nom nāng.

Distr.: Siam.

SIAM. Dio Chieng dao, alt. c. 1300 m, open evergreen forest: *Kerr 5555* (K), tree c. 5 m, fr. June; Phre, alt. 180 m: *Phra Vanpruk 469* (K), fl.

Remarks: In Kerr's publication the type specimen is indicated as being *Kerr 5335* but the label bears the number *5555* and therefore this number is regarded as the correct collector's number.

Provisionally *Planchonella lenticellata* is kept apart from *X. burmanica*, on account of the distinct differences though it has been reduced to varietal rank. Yet it is to be doubted whether these details will hold good when more material is available.

11. X. tomentosa (Roxb.) Rafinesque, Sylv. Tell., 1838, 36 — *Sideroxylon tomentosum* Roxburgh, Pl. Coast of Coromandel 1, 1795, 28, t. 28; Wallich, Cat., 1828, 4153, p.p.; Roxburgh, Fl. Ind., ed. Carey 1, 1832, 602; Graham, Bombay Fl., 1839, 1057; Kurz, For. Fl. Br. Burma 2, 1877, 116; Hooker, Fl. Br. Ind. 3, 1882, 538; Gamble, Fl. Madras 4, 1921, 759 — *Pouteria tomentosa* (Roxb.) Baehni, 1942, 368 — *Planchonella dongnaiensis* Pierre, Not. bot. Sapot., 1890, 36, *nomen*; Dubard, 1912, 54, *nomen*; Pierre in Dubard in Lecomte, Not. Syst. 2, 1911, 87, *descr.* — *Sideroxylon dongnaiense* Pierre, l. c. 1890, 36, *nomen*; Pierre in Lecomte, Fl. Gén. Indo-Chine 3, 7, 1930, *descr.* — *Pouteria ? dongnaiensis* (Pierre) Baehni, 1942, 415.

Trees, 10—15 m, often spiny. Branchlets sometimes subflexuose, terete, 1—4 mm in diam., striate, sometimes markedly lenticellate, ferruginously, yellowish or greyish tomentose, ultimately glabrous; spines 0.6—5 cm long. *Leaves* elliptic, elliptic-oblong, ovate or obovate, 4—14 by 2—6 cm, apex obtuse or short obtusely or acutely acuminate, cuneate at base, decurrent; margins undulate; chartaceous or coriaceous, juvenile leaves ferruginously or yellowish tomentose on either side, glabrescent, sometimes tomentose in the smallest leaves only, nitidulous above, dull below; midrib prominulous, flattened or impressed above and sometimes minutely crested, prominent below, secondary nerves 8—16, ascending at an angle of 50°—80°, straight, forked at their tips and irregularly, sometimes indistinctly, archingly joined, impressed or prominulous above, prominent below, tertiary nerves reticulate, sometimes subparallel to the secondary ones, often one nerve more distinctly so, flat or impressed above, prominulous below, sometimes inconspicuous at either side; petioles 3—20 mm long, grooved above, sometimes flat or with 2 narrow linear ribs in the groove, rounded below, ferruginously, yellowish or greyish tomentose, glabrescent. *Flowers* fragrant, in clusters; pedicels 4—7 mm, ferruginously, yellowish or greyish tomentose. *Sepals* triangular or ovate, 4—6 by 2—3.5 mm long, apex acute or subacute, ferruginously yellowish or greyish tomentose without, sericeous within, inner sepals smaller than outer ones and with a membranous margin. *Corolla* white or dull white, 4—8 mm long, lobes lanceolate-oblong or ovate, 3.5—4.5 by 1.5—2.5 mm. *Stamens* 3—5 mm long, filaments subulate, 1—1.5 mm long, anthers sagittate, 3—4 mm long, apiculate, dehiscing laterally. *Staminodes* lanceolate, long aristate, 3—3.5 mm long. *Ovary* barrel-shaped to conoid, 1—2 by 1.5—2 mm, 5-lobed, densely yellowish tomentose; style filiform, 6—15 mm long, angular. *Fruits* ovoid to fusiform, 2—3 by 1—1.8 cm, 1—5-seeded, acute or obtuse, sometimes crowned by the 1—10 mm long, persistent style, whitish, black or brownish, yellowish or ferruginously tomentose, glabrescent, pericarp hard, woody; seeds fusiform, 1.6—2 by 0.6—1.1 by c. 0.5 cm, obtuse at apex, acute at base, yellow or brown, nitidous, scar nearly as long to half as long as the seed, linear or small, circular and basal, 3—4 mm wide, whitish, albumen copious, cotyledons foliaceous, radicle stout, 2—3 mm, obtuse.

Lectotype specimen: *Haines 4849a* in K.

Vern. names: kanta bohul (Uriya); palei (or pala) (Tamil); hoodigalla (Bagada); holay (Bagada); holly (Bagada); mul makil (Tamil); thit-cho (Burma); cay-gang, cây chéo (Annam); phle-gang (Moi). Except for the three last-named the names are extracted from literature.

Use: The wood is said to be useful as it is hard, heavy and fibrous. The fruit is edible and is often conserved.

Distr.: Ceylon, India and Burma to Indochina.

Ceylon. without loc.: *Thwaites s.n.* (BM) fl. & fr.

India. Gundattu Shola, Pulneys: *Bourne 962* (K), fr. June; Briar Shola: *Bourne 6134* (K), fr. May; Krurda, Puri Dut, Barum hillforest: *Haines 4849a* (K), fr. Dec.; Cheetoo, on the oogalee Nuddi: *Ritchie 1104* (K), tree 6 m, fl. white, fragrant, Nov.; Vizagapatam: *Lushington s.n.* (K), fr.; ibidem, Aralagadam Ghats: *Lushington s.n.* (K), fl. May; Nilgiris: *Beddome 4854* (SING), fl.; ibidem: *Beddome 4855* (SING), fl.; ibidem: *Thompson s.n.* (L), fl.; *Perrottet 29* (G), fl.; Kondon Rai, Bombay: *Young s.n.* (L), fl.; Mangalore: *Wight 1747* (L), fl.; Santaveri Bababood, c. 1200 m: *Meebold 6994* (SING), fr. Oct.; Malabar: *Stocks s.n.* (S), fl.

Burma. Prome and Pegu districts, (f. Kurz., 1877).

Indochina. Annam, Bien-Hoa, near Bao Chiang: *Pierre 3274* (FI, L, P), fl. & fr. Oct.; Gia-Lau-Me and Tin-Man (f. Baehni, 1942).

Remarks: As Roxburgh did not indicate a type specimen, *Haines 4849a* was chosen as the one most closely resembling the description and picture given by him. It must be pointed out that, although Roxburgh describes the throat of the corolla as being "downy" this is not shown in his picture. Moreover, the margins of the staminodes are drawn with an irregular outline, in fact the latter is fimbriate, as far as is observed in the flowers examined.

This variable species might be subdivided into two varieties, one with a flattened or impressed upper side of the midrib, secondary nerves and veins and with a fusiform fruit with wrinkled, fleshy pericarp when dry, while the second variety has prominulous midribs above, secondary nerves and veins and an ovoid fruit with small, fibrous pericarp, the latter variety being conspecific with the type variety. As there are only a few specimens of each available these varieties are not described here as it is doubted whether the above-mentioned details are constant and of taxonomic value since e. g. *Meebold 6993* and *Bourne 6134* have fruits of the first-named form but leaves of the second. Characteristic examples of the second variety are *Bourne 962, Ritchie 1104* (however, with fruits with slightly wrinkled pericarp) and *Haines 4849a.* A thoroughly good specimen of the first-named variety is only *Lushington s.n.*

12. X. cambodiana (Pierre) van Royen, nov. comb. — *Planchonella cambodiana* Pierre, Not. bot. Sapot., 1890, 36, *nomen*; Dubard, 1912, 54, *nomen*; Pierre in Dubard in Lecomte, Not. Syst. 2, 1911, 85, *descr.* — *Sideroxylon cambodianum* Pierre, l. c. 1890, 36, *nomen*; Lecomte, Fl. Gén. Indo-Chine 3, 7, 1930, 894, *descr.* — *Pouteria cambodiana* (Pierre) Baehni, 1942, 370.

Shrubs or trees, (3—)8—10 m, sometimes spiny. Branchlets terete, 2—4 mm in diam., lenticellate, densely whitish and ferruginously tomentose, glabrescent; spines 1—2 cm, acute. *Leaves* rhomboid-obovate or elliptic, sometimes lanceolate, (2—)3.5—7.5 by 2.5—4.5 cm, apex obtuse, entire or retuse, sometimes short obtusely acuminate, tapering towards the base; subcoriaceous or chartaceous, sparsely tomentose above, densely tomentose below, glabrescent on either side; midrib prominulous above, prominent below, secondary nerves 5—11, ascending at an angle of 55°—70°, but c. 45° in the basal part, slightly curved, forked at their tips, sometimes indistinct archingly joined, but mostly diminishing until inconspicuous, prominulous or impressed above, prominent below, tertiary nervation laxly reticulate, inconspicuous or invisible at either side; petioles 2—5 mm long, slightly flat above, densely whitish or yellowish tomentose. *Flowers* in few-flowered clusters; pedicels terete or angular, 3—7 mm long, whitish or ferruginous appressedly tomentose. *Sepals* 4 or 5, ovate or oblong, 2.5—4 by 1—2 mm, apex obtuse or obtusely acuminate, whitish appressedly pubescent without, ferruginously sericeous within, sometimes carinate. *Corolla* 4—6 mm long, lobes oblong-lanceolate or ovate, 3—4 by c. 1.5 mm, apex obtuse or acute. *Stamens* 3.5—4.5 mm long, filaments subulate, 2—2.5 mm long, anthers sagittate or ovate, 2—2.5 mm long, apex acute, dehiscing extrorsely. *Staminodes* lanceolate or linear, 2—3 by c. 0.5 mm, with a filiform acumen. *Ovary* globose-ovoid, 2.5—3 mm in diam., 4- or 5-celled, densely whitish tomentose; style subulate, 5-ribbed, 4—5 mm long. *Fruits* ovoid, 2—2.5 by 1—1.5 cm, apex obtuse or acute, 1—(3)-seeded, densely yellowish tomentose, pericarp woody; seeds ovoid-ellipsoid, c. 1.5 by 0.8 by 1.1 cm, laterally compressed, acute or obtuse at either end, brown, nitidous, scar as long as seed, 4—5 mm wide, whitish, albumen copious, cotyledons foliaceous, radicle conoid, 1—2 mm, acute.

Type specimen: *Pierre 921* in P.

Distr.: Indochina.

Var. **cambodiana** — *Fig. 8.*

Leaves rhomboid-obovate or elliptic, apex rounded to short obtusely acuminate.

Type specimen: *Pierre 921* in P.

Vern. names: sra ngam, cây gang tu hu (Khmer); dan ca diêu, ca diêu (Moi); tan nom (Siam).

Use: A decoction of roots, leaves and wood is given to women and cattle to stimulate the flow of milk. The hard wood is used for timber, the fruit is edible.

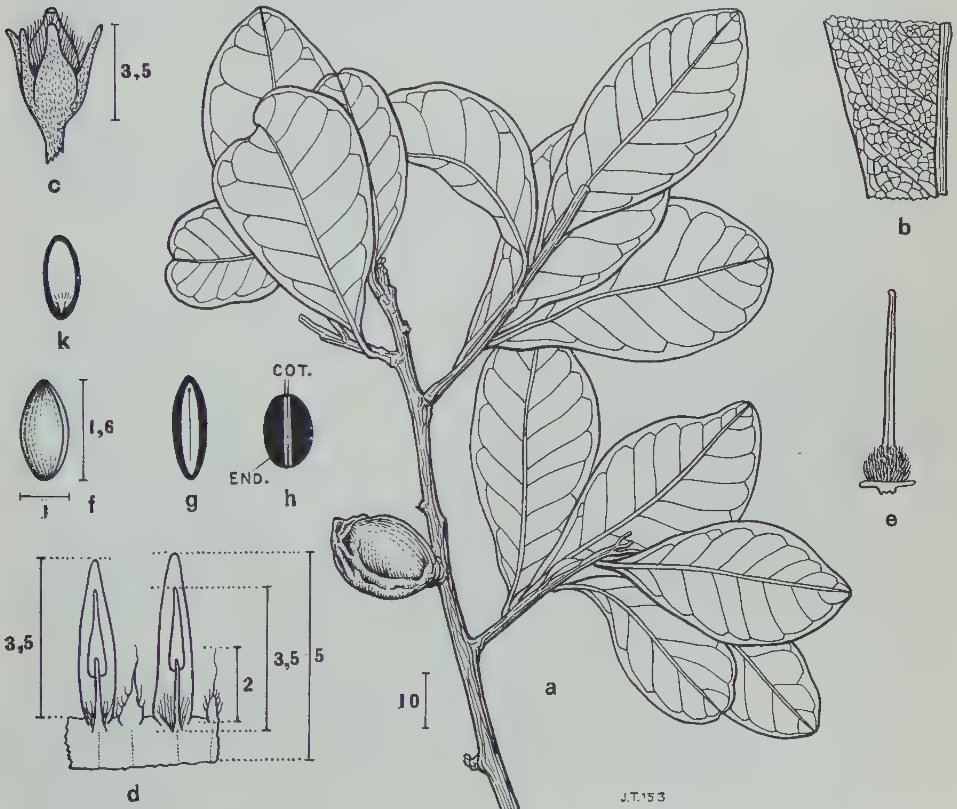

Fig. 8. *X. cambodiana*, var. *cambodiana*, a. habit, b. part of leaf, c. juvenile fruit, d. corolla, inside, e. gynaecium, f. seel, lateral view, g. seed, h. transverse section of embryo, k. transverse section of embryo. (from *Pierre 921*).

Distr.: Indochina, Siam.

Indochina. Cambodia, prov. Pên Lover: *Pierre 921* (L, P) — Annam, near Nhatrang and prov. Phanrang (f. Lecomte, 1930).

Siam. Lampang, 240 m, in open deciduous jungle: *Winit 848* (K), evergreen, milky, sometimes spiny shrub, c. 3 m, fl. April.

Var. **thorelii** (Lec.) van Royen, nov. stat. — *Sideroxylon cambodianum* Pierre, var. *thorelii* Lecomte, Fl. Gén. Indo-Chine 3, 7, 1930, 894.

Leaves lanceolate, markedly attenuate at apex.

Type specimen: *Thorel s.n.* in P.

Distr.: Indochina.

INDOCHINA. Laos, between Ubon and Kemmaret: *Thorel s.n.* (P), fl. Oct.

Remarks: This variety hardly seems to be a good one, since the lanceolate, acuminate leaves, according to Lecomte, form the single difference between the two varieties. The rather poor material does not allow a decision and more new collections have to be studied to solve this minor problem.

13. X. assamica (Clarke) van Royen, nov. comb. — *Sideroxylon assamicum* Clarke in Hooker, Fl. Br. India 3, 1882, 537; Kanjilal & Das, Fl. Assam 3, 1939, 192 — *Planchonella assamica* (Clarke) Pierre, Not. bot. Sapot., 1890, 36 — *Sideroxylon tomentosum* Wallich, Cat., 1828, 4153, p.p. — *Pouteria assamica* (Clarke) Baehni, 1942, 364 — *Planchonella assamica* (Clarke) Fletcher, Kew Bull. 1937, 1938, 327, *note.*

Trees. Branchlets terete or angular, 2—5 mm in diam., yellowish or ferruginously villous, glabrescent. *Leaves* ovate, elliptic or broadly lanceolate, 6—16.5 by 2—7 cm, apex acute or acutely acuminate, rarely obtusely acuminate (acumen 3—15 mm), base broadly cuneate or rhomboid, abruptly narrowed into and shortly decurrent; membranous or chartaceous, nitidous and glabrous above, except sometimes for the villous midrib and nerves, brownish villous below, glabrescent except sometimes along midrib and secondary nerves; midrib prominulous and minutely crested above, prominent below, secondary nerves 9—15, ascending at an angle of 60°—85°, curved, sometimes at tip only, forked at their tips and irregular archingly joined, prominulous above, prominent below, tertiary nerves laxly reticulate, prominulous above, prominent or prominulous below; petioles 5—15 mm long, canaliculate to flat above, yellowish or ferruginously tomentose. *Flowers* dull white, in few-flowered clusters, pendulous; pedicels angular, 4—7 mm long, yellowish or ferruginously tomentose. *Sepals* oblong-lanceolate, 4—5 by c. 2 mm, apex acute, densely yellowish or brownish tomentose or villous without, sericeous within, inner sepas with membranous margins, subcarinate (according to Clarke acute). *Corolla* 4—8 mm long, lobes lanceolate, 3—4 by c. 1.5 mm, obtuse or truncate at apex. *Stamens* 2.5—4.5 mm long, filaments subulate, 1—1.5 mm long, anthers sagittate, 2—2.5 mm long, apex mucronate, dehiscing extrorsely, base of thecae obtuse. *Staminodes* lanceolate, 2.5—3.5 mm long, apex long aristate, subcarinate at dorsal side. *Ovary* ovoid-globose, c. 2 mm in diam. and high, 5-lobed, yellowish pilose; style subulate, 8—10 mm long, angular, glabrous. *Fruits* ellipsoid or ovoid, 2—3 by 0.8—1.5 cm, 1- or 2-seeded, attenuate at base, crowned by the up to 7 mm long remnant of the style, yellowish or ferruginously villous, glabrescent, blackish or brownish when dry, pericarp fleshy; seeds ellipsoid, 10—12 by 3—4 by 2—3 cm, acute at either end, black, nitidous, scar as long as seed, embryo unknown.

Lectotype specimen: *Masters s.n.* in K.

Vern. name: dieng-soh-mānong-ksui (Khasi).

Distr.: Assam.

ASSAM. without loc.: *Masters s.n.* (K), fr.; ibidem: *Hooker (?) 628* (K), fr.; ibidem, *Jenkins s.n.* (L), fl.

Remarks: As Clarke did not indicate a type specimen it is proposed to select *Masters s.n.* as a lectotype specimen. This specimen bears fruit only and therefore *Jenkins s.n.* is proposed as a 'typus florum'.

14. X. embeliifolia (Merrill) van Royen, nov. comb. — *Sideroxylon embeliaefolium* Merrill, Lingnan Sc. Journ. 14, 1935, 45, f. 14 — *Fig. 9.*

Shrubs or trees, 2.5—15 m, sometimes spiny. Branchlets terete or angular. 1—3 mm in diam., blackish or brownish, striate, glabrous; spines 1—1.5 cm, black, acute. *Leaves* scattered or sometimes borne on brachyblasts, spatulate, obovate-oblong, obovate or elliptic, 2—9 by 0.7—3 cm, apex retuse, obtuse, acute or obtusely or acutely acuminate, base tapering, decurrent; margins involute, undulate; coriaceous, glabrous and nitidous or nitidulous on either side; midrib impressed above, prominent below, secondary nerves 7—12, ascending at an angle of 45°—65°, straight, irregularly joined and sometimes forming a nearly straight intramarginal nerve, impressed above, prominent below, tertiary nerves reticulate, subparallel or parallel to the secondary nerves, impressed above, sometimes inconspicuous, below as much prominent as the secondary nerves; petioles 2—6 mm long, canaliculate above, rounded below, glabrous. *Flowers* mostly solitary, sometimes in few-flowered clusters; pedicels terete, 3—5 mm long, yellowish to whitish sericeous. *Sepals* ovate-lanceolate, 5—5.5 by 2—2.5 mm, apex subacute, yellowish or whitish sericeous on either side. *Corolla* white, 10—14 mm long, lobes linear, 7—10.5 by 2—3 mm, apex obtuse. *Stamens* 6—8.5 mm long, filaments subulate, 4—5 mm long, anthers sagittate, 3—4 mm long, connective prolonged, with two acute teeth at the top, dehiscing extrorsely. *Staminodes* ovate, 4—7.5 mm long, apex long aristate, densely ciliate along margin at base. *Ovary* ovoid, c. 1.5 by 2.5 mm, 5-lobed, densely ferruginously tomentose; style subulate, 11—15 mm long, 5-ribbed, with 5 stigmas. *Fruits* globoid or obliquely obovoid, 1—1.5 by 1—1.5 cm, often provided with a short remnant of the style, 1- or 2-seeded, black when dry, glabrous or slightly pubescent at base, pericarp fleshy; seeds ellipsoid, laterally compressed, c. 12 by 7 by 5 mm, brown, nitidous, subrostrate at apical part of scar, scar fairly broad, nearly as long as seed, 2—5 mm wide, whitish, albumen copious, cotyledons foliaceous, radicle conoid, 1—2 mm, obtuse.

Type specimen: *Lau 567* in NY.

Vern. name: ko to (Lai).

Distr.: Hainan.

HAINAN. Chiang-kiang distr., Tsat Cha Ling, moist gentle slope, loam: *Lau 1945* (BM), tree 5 m, fr. June; Tan distr., I Kap Shan, dry gentle slope, sandy soil, thicket: *Lau 1184* (BM), tree 6 m, fl. Febr.; ibidem: *Lau 1172* (BM), tree 5 m, fl. white, Febr.; Wenchang distr., Tung Koo Shan and vicinity, near Shan Hoi village, dry gentle slope, sandy soil, thicket: *Fung 20357* (BM, SING), tree 5 m, fr. Aug.; Ngai distr., Naam Shan Leng, dry gentle slope: *Lau 269* (K), tree c. 2.5 m, fr. July; ibidem, Ko Leng, on moist loamy, gentle slope in thicket: *Lau 567* (K), tree 15 m, fl. & fr. Oct.; Yaichow, c. 350 m, in forest: *Chun & Tso 44618* (K), tree 8 m, fl. Dec.; Kan-en distr., Chim Fung Ling near Sam Mo Watt village, dry gentle slope, forest,

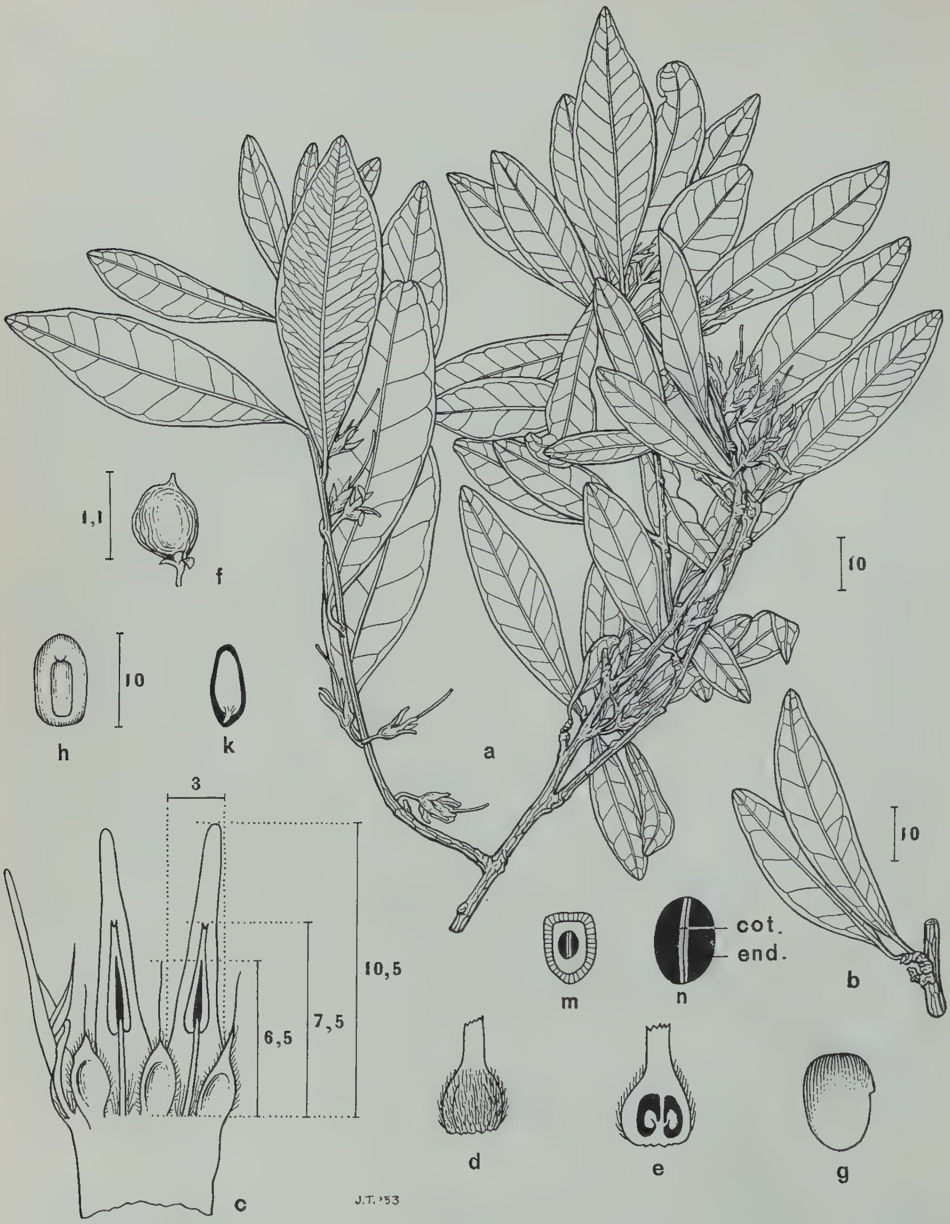

Fig. 9. *X. embeliifolia*, a. habit, b. brachyblast with leaves, c. corolla, inside, d. ovary, e. longitudinal section of ovary, f. fruit, g. seed, h. seed, k. longitudinal section of embryo, m. transverse section of seed, n. transverse section of embryo. (from *Lau 3092*).

fairly common: *Lau 3507* (S), tree 4 m, fl. March, juv. fr.; without loc., on rocks at top of mountain: *Liang 66089* (S), shrub 2 m, fl. white; ibidem, in shaded thicket: *Liang 63012* (S), tree 4—6 m, fr. green, Sept.

Remarks: This species differs in a few details from the other species of the genus, *viz.* in the reticulate tertiary nervation subparallel or parallel to the secondary nerves, the rather broad scar of the seed, the relatively large flowers and the 2-tipped connective of the anther. Though the broad scars resemble those in the genus *Mastichodendron* where it is roundish and basal I do not hesitate to insert this species in *Xantolis* on account of the hairs at the base of the filaments and the aristate staminodes with ciliate margins.

Collectors' numbers

The numbers between brackets indicate the number of the species.

Balansa 4337 (5) — Beddome 4854 (10), 4855 (10) — Bon 2899 (2), 4266 (5), 5220 (5) — Bourne 6134 (11) — Caday 38268 (5) — Chun & Tso 44270 (2), 44618 (14) — Clemens 18198 (8) — J. & M. S. Clemens 3317 (9) — Collett 740 (10) — Conklin PNH 19335 (8) — Cuming 1147 (8) — Forrest 17886 (1), 18555 (1) — Fung 20357 (14) — Haines 4849a (11) — Hooker 4 (3), 628 (13) — Jenkins s.n. (13) — Kerr 5555 (10), 5809 (10), 6392 (10), 9602 (10), 10124 (7) — Lace 5987 (10), 6241 (10) — Lau 269 (14), 567 (14), 1172 (14), 1184 (14), 1945 (14), 3507 (14) — Liang 63012 (14), 66089 (14) — Lushington s.n, (11) — Masters s.n. (13) — MacClure 8488 (2), 8559 (2) — Meebold 6994 (11) — Pavie s.n. (2) — Perrottet 29 (11) — Pételot s.n. (5) — Phra Vanpruk 469 (10) — Pierre 921 (12), 3274 (11), 3276 (9) — Poilane 9718 (6), 9721 (6) — Ramos 1925 (8) — Ritchie 1104 (11) — Stocks s.n. (11) — Thompson s.n. (11) — Thorel s.n. (3, 12) — Wang 73529 (4), 73977 (4), 74441 (4), 75394 (4), 75088 (4), 77042 (4), 77109 (4), 77205 (4) — Wight 1747 (11) — Winit 848 (12).

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The numbers are those of the species in the text; those in *italics* are synonyms and names in **bold** figures are new combinations.

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  dongnaiensis (Pierre) Pierre ... 11
  hookeri (Clarke) Pierre 3
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  parvifolia (A. DC) Pierre 8
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  ? *lenticellata* (Fletcher) Baehni 10
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REVISION OF THE SAPOTACEAE OF THE MALAYSIAN AREA IN A WIDER SENSE

VII [1]). Planchonella Pierre

by

P. VAN ROYEN

(Rijksherbarium, Leiden)

(Issued 15. VI. 1957).

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INTRODUCTION

This study includes the whole genus *Planchonella*, contrary to some other publications in this series, which refer only to species found in the area covered by the Flora Malesiana. This seemed desirable both on account of the fact that only a small number of species is found outside that area, and of the doubted generic status of *Planchonella* versus *Pouteria* sensu Baehni.

Our conclusion is that *Pouteria* and *Planchonella* represent two separate genera. *Pouteria* has its main centre of development in South America, *Planchonella* in New Guinea, Australia and New Caledonia. The last-named arc has thus so far rather been underestimated as a centre of speciation in *Planchonella*.

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[1]) I—III in Blumea VI, 3, 1952, 547—595; IV—V in Blumea VII, 2, 1953, 364—412; IVa in Blumea VII, 3, 1954, 481—483; IIa, IVb, Va, VI—IX in the present issue.

The results of this study could not have been obtained without the kind help of the Directors of the herbaria of Berlin, Brisbane, Bogor, Florence, Jamaica, Plain, Kepong, Kew, Kuching, Lae, Leiden, London, Melbourne, Paris, Singapore, Stockholm, Sydney, Utrecht, Washington and Zürich, to whom I express my most sincere thanks.

The abbreviations of the names of herbaria are those proposed in the Index Herbarium of Lanjouw and Stafleu, ed. 2, (1954).

GENERAL PART

Diagnosis of the genus

Planchonella Pierre, Not. bot. Sapot., 1890, 34; Guillaumin, Ann. Mus. col. Mars. 19, 1911, 287; Dubard, Ann. Mus. col. Mars. 20, 1912, 41; Dubard in Lecomte, Not. Syst. 2, 1913, 81, 84, 132; Moore, J. Linn. Soc. 45, 1921, 352; Lam, Bull. Jard. bot. Bzg, sér. 3, 7, 1925, 193; Lam, l. c., sér. 3, 8, 1927, 467; Gillespie, B. P. Bish. Mus. Bull. 74, 1930, 11, f. 12; Lam, Nova Guinea 14, 1932, 558; Guillaumin, Bull. Mus. hist. nat. Paris, sér. 2, 5, 1933, 322; Däniker, Vierteljahrsschr. Nat. Ges. Zürich 142, 1933, 352; Burkill, Kew Bull. 1935, 319; Christophersen, B. P. Bishop Mus. Bull. 128, 1935, 170, f. 25; Lam & Kerpel, Blumea 3, 2, 1939, 258; Lam, Blumea 5, 1, 1942, 2; Guillaumin, Bull. Soc. bot. Fr. 89, 1942, 222; Lam, Boissiera 7, 1943, 94; Lam, Blumea 5, 2, 1943, 337; Guillaumin, Bull. Soc. bot. Fr. 91, 1944, 71; White, J. Arn. Arb. 31, 1950, 109; Guillaumin, Medd. Göt. Bot. Trädgärd 18, 1950, 256; Francis, Austr. Rain Forest Trees, ed. 2, 4, 1951, 448; Guillaumin, Medd. Göt. Bot. Trädg. 19, 1952, 26; Lam & van Royen, Taxon 2, 5, 1953, 112 — *Sersalisia* R. Br., Prodr. 1, 1810, 529, p.p.; Baillon, Hist. Pl. 11, 1891, 279; Domin, Bibl. Bot. 89, 1928, 1061 — *Achras* (non L.), Endlicher, Prodr. Fl. Norfolk., 1833, 49; idem, Icon. Gen. Pl. 1838, t. 83; Bentham, Fl. Austr. 4, 1869, 280 — *Hormogyne* A. DC, Prodr. 8, 1844, 176; Engler & Prantl, Nat. Pfl. Fam. 4, 1897, 145 — *Poissonella* Pierre, Not. bot. Sapot., 1890, 29 — *Beccariella* Pierre, l. c., 30 — *Siderocarpus* Pierre, l. c., 31 — *Croixia* Pierre, l. c., 32 — *Ochroluma* Baillon, Bull. Soc. bot. Linn. Paris 2, 112, 1890, 891 — *Peuceluma* Baillon, l. c., 892; Baillon, Hist. Pl. 11, 1891, 286 — ? *Pyriluma* Baillon, l. c. 1890, 892 — *Iteiluma* Baillon, l. c. 1890, 892; idem, l. c. 1891, 280 — *Daphniluma* Baillon, l. c. 1890, 895; idem, l. c. 1891, 280 — *Myrsiniluma* Baillon, l. c. 1890, 897 — *Pleioluma* Baillon, l. c. 1890, 898 — *Syzygiopsis* Ducke, Arch. Jard. bot. Rio de Jan. 4, 1925, 158 — *Selsalisia* Nakai, Rigakkai 26, 5, 1928, 9; Nakai, Bull. Biogeogr. Soc. Japan 1, 3, 1930, 261; Nakai, Bull. Tokyo Sc. Mus. 22, 1948, 31 — *Achrouteria* Eyma, Rec. trav. bot. néerl. 33, 1936, 192.

Laticiferous trees or shrubs. Branchlets often in groups of 3, sometimes 2, 4 or 5 together, at the top often with bud scales, young branchlets with indumentum, older ones mostly glabrous, stipules none or soon caducous. *Leaves* scattered, alternate, subopposite to opposite, sometimes conferted at tips of branchlets or together with flowers borne on brachyblasts, secondary nerves joined by tertiary nerves except when the latter are parallel to the secondary nerves. *Flowers* solitary or in clusters, axillary to leaves or, if along more or less leafless axillary shoots to bracts, or along brachyblasts; often with bracts at base of pedicels. Flowers mostly 5-merous, rarely 4- or 6-merous, ⚥ or more rarely ♀ or ♂. *Sepals* conchate, mostly forming a short tube with imbricate lobes. *Corolla* glabrous on either side, rarely with an indumentum without. *Stamens* inserted in the throat of the tube, epipetalous, anthers dehiscing extrorsely to introrsely with two longitudinal slits, connective dark coloured. *Staminodes* alternipetalous. *Disk* cupshaped or annular, sometimes absent, usually pubescent. *Ovary* 5-celled, rarely 4- or 6-celled. *Ovules* epitropous, mostly attached in the upper half of the cells. *Fruits* a berry which is sometimes dryish or woody, 1—6-seeded. *Seeds* with a long, narrow, linear scar, rarely the latter half as long as the seed or shorter, hilum at the top, sometimes at the end of a short raphe, micropyle at the base, albumen copious, cotyledons thin and foliaceous, radicle exserted below the commissure of the cotyledons.

Type species: *P. obovata* (R. Br.) Pierre

Distr.: About 100 species in Southeast Asia, Malaysia, Australia, Micronesia, to Polynesia, Hawaii Islands and New Zealand. One species reaching the Seychelles and two species in South America.

Abbreviations of some references

Baehni 1942 = Ch. Baehni, Mém. sur les Sapot. 2, Le genre Pouteria, Candollea 9, 1942, 147—476.
Dubard 1912 = M. Dubard, Les Sapotacées du groupe des Sideroxylinées, Ann. Mus. col. Mars. 20, 1912, 1—90.
Lam 1925 = H. J. Lam, The Sapotaceae etc. of the Dutch East Indies, Bull. Jard. bot. Bzg, sér. 3, 7, 1925, 193—218.
Lam 1927 = H. J. Lam, Further studies etc., Bull. Jard. bot. Bzg, sér. 3, 8, 1927, 467—476.
Lam 1932 = H. J. Lam, Sapotaceae, Nova Guinea 14, 1932, 549—570.
Lam 1942 = H. J. Lam, Wild Pacific Sapotaceae etc., Blumea 5, 1, 1942, 1—46.

History and delimitation of the genus

The genus *Planchonella* has first been described by Pierre in 1890. It has been removed from *Sideroxylon* L. on account of several characteristics, the most important ones being the linear scar (in *Sideroxylon* circular), the copious albumen and the foliaceous cotyledons. The genus included 36 species divided into three unnamed groups one of which (Dubard's *Hookeriplanchonella*) has been inserted in the genus *Xantolis* (See van Royen in this same issue), whereas others have been amalgamated with other species of *Planchonella* or *Pouteria*.

Dubard, 1912, extended the genus so as to include *Croixia* Pierre, *Sersalisia* R. Br., *Achras* L. p.p., *Hormogyne* A. DC, *Sapota* A. DC, *Ochroluma* Baillon, *Iteiluma* Baillon, *Pyriluma* Baillon, *Daphniluma* Baillon, *Poissonella* Pierre, *Peuceluma* Baillon, *Myrsiniluma* Baillon, *Pleioluma* Baillon, *Ecclisanthes* Blume, *Beccariella* Pierre, *Siderocarpus* Pierre, *Boerlagella* Pierre and *Beauvisagea* Pierre. The latter two are at present regarded respectively as a (doubtful) separate family, *Boerlagellaceae* (Lam 1925, 250—251) and as a species of *Pouteria, P. maclayana* (F. v. M.) Baehni.

Dubard distinguishes 9 sections, and moreover 2 sections with an uncertain place (*Beauvisagea* and *Pyriluma*), of which in this publication *Hookeriplanchonella* has been inserted in *Xantolis* Rafinesque and *Boerlagella* is raised to a family of its own, *Boerlagellaceae* H. J. Lam.

Lam, 1925 and 1927, when studying *Planchonella* did not consider the subdivision of the genus, though the name of the section in Dubard's sense, to which a certain species belonged, was mentioned.

Baehni, 1942, considers *Planchonella* a part of *Pouteria*. Nowhere, however, did he explicitly state the reason for this union, and only by scrambling together some scattered indications is it possible to discover them. The underlying idea in Baehni's treatment of *Planchonella* and *Pouteria* — in imitation of Dubard (Comptes rendues Acad. Sc. 152, 1911, 390) — seems to be that the proportion between the amount of albumen and the thickness of the cotyledons was regarded as insufficient for a generic delimitation and as also the other details were considered insufficient to separate the two genera, he united *Pouteria* and *Planchonella* to one genus.

Engler, independent from Pierre, in 1890, inserted the species now in *Planchonella*, in *Sideroxylon*, distinguishing 10 sections, one (*Sinosideroxylon*) representing at present a part of the genus *Mastichodendron*, one (*Hookerisideroxylon*) inserted in another genus, 3 sections including American and African species and the other 5 sections dealing with the Asiatic, Australian and Pacific species, comprising the bulk of *Planchonella*. The genus *Hormogyne*, by Dubard and Lam recognized as a part of *Planchonella*, is by Engler maintained as a separate genus. Engler, in this subdivision, lays emphasis on the nervation of the leaves, but though in *Planchonella* 3 types can be distinguished, it is not possible to establish so many sections. In 1897 Engler published the same division adding some more species.

Baillon, 1891, separates the main part of the species from *Sideroxylon*, inserting them into *Sersalisia*. *Planchonella* and a large number of genera described by him earlier are also inserted in *Sersalisia*. Originally, *Sersalisia* as described by Brown, 1810, included 2 species, *S. sericea*, which represents a *Pouteria* and *S. obovata* which now is regarded as belonging to *Planchonella*. *S. sericea* is based on Aiton, Hortus Kewensis 1, 1789, 262 and must therefore represent the type species of *Sersalisia*. As, however, *Sersalisia sericea* is a species of *Pouteria*, a genus described in 1775, it must be regarded as a later synonym of *Pouteria*. For this reason it is not necessary to conserve *Planchonella* against *Sersalisia*. This has already been pointed out by Lam and van Royen in Taxon 2, 5, 1953, 112. Baillon also combined *Hormogyne* with *Sersalisia*, but since *Hormogyne* is an older synonym of *Planchonella* it became necessary to conserve *Planchonella* against *Hormogyne* (Lam and van Royen in Taxon, l. c.), when it was decided to use *Planchonella* and not *Hormogyne* as the generic name.

In the present study *Planchonella* is regarded as a separate genus apart from *Pouteria*, *Xantolis* and *Sideroxylon* on account of the following details:

From *Sideroxylon* it is separated by the narrow, linear scar, which is circular and basal in *Sideroxylon*. However, some species in *Planchonella*, e. g. *P. novo-caledonica* and *P. lucens*, show a scar resembling that

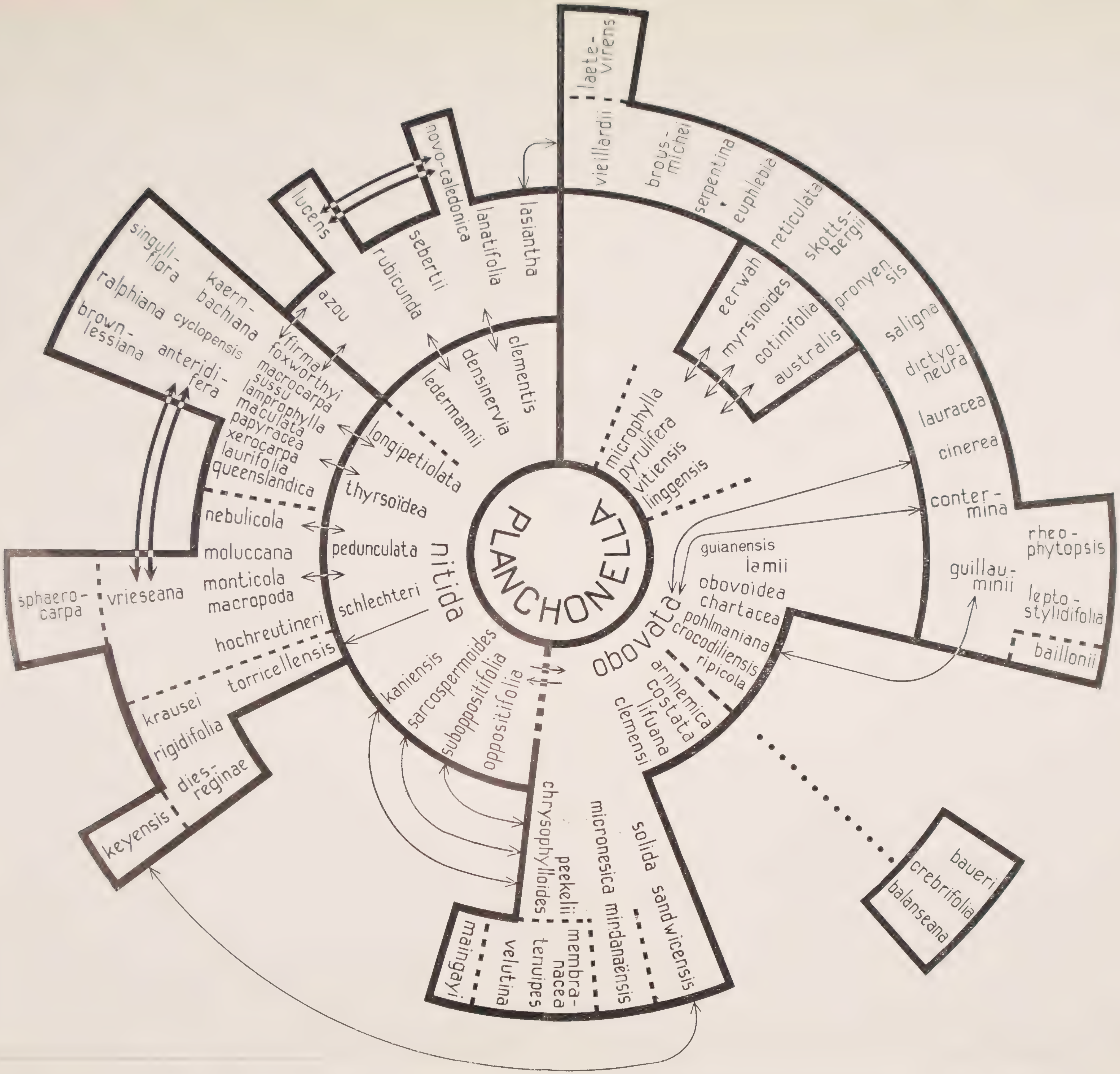

Fig. 1. *Chart showing the interrelationship of the species of Planchonella.*

The thick lines enclose the species of the seven groups which are distinguished in the genus.
The broken lines mark the different 'sections' in one group.
Thick arrows indicate the affinities between species in one group though they might belong to different 'sections'.
Thin arrows indicate the species in different groups which connect the two groups.
Near P. baillonii also P. pinifolia.

of *Sideroxylon,* in being shorter than half the length of the seed, but never circular and completely basal.

From *Pouteria* it differs in the embryos, as those of *Pouteria* are provided with thick cotyledons and a thin layer of albumen, which is sometimes absent, or almost so, while in *Planchonella* the reverse is found. As far as I have studied the material — the species from Africa mentioned by Baehni in his work on *Pouteria* included — no intermediate stages are found. The scar in *Planchonella* is narrow and linear, with the above-mentioned exceptions, that of *Pouteria* is sometimes also narrow and linear but more often it is much broader and sometimes covers half the circumference of the seed or more, e. g. in *Pouteria occidentalis* (H. J. Lam) Baehni. The fruits in *Pouteria* are often apple- or pear-shaped, very large and fleshy, while the fruits in *Planchonella* are rather small except the large fusiform fruits in *P. anteridifera, P. vrieseana* and *P. moluccana,* but in all these cases the pericarp is either fleshy or subligneous to ligneous. The flowers in *Pouteria* are on the whole 5-merous, but also often 4-merous, while those in *Planchonella* are also 5-merous, but rarely 4-merous and sometimes, but less rarely, 6-merous. In *Pouteria,* however, sometimes a 7- or 8-merous corolla is found together with a 5-merous calyx.

From *Pouteria, Planchonella* also can be kept apart, as is pointed out earlier, by the main centre of development, that of *Planchonella* being New Guinea, Australia and New Caledonia. *Pouteria,* however, seems to have its main centre of development in South America.

These details seem to give ample reason for keeping *Planchonella* apart from *Pouteria,* contrary to Baehni's opinion.

The South American genera, *Achrouteria* Eyma and *Syzygiopsis* Ducke, fall within the delimitations of the genus *Planchonella* as defined here, and therefore have been incorporated in the latter.

Subdivision of the genus. *Fig. 1.*

In view of the present study of the genus in which all species of *Planchonella* have been examined, the subdivision given by Dubard e. a. is hardly tenable. His section *Hookeriplanchonella,* for instance, consists of species of two genera, i. e. *Xantolis* and *Planchonella.* His section *Hormogyne* includes species with a free or adnate disk. The same is found in *P. australis* and *P. myrsinoides,* which in many respects resemble the other species of that section, but are placed by him in *Hookeriplanchonella.* Between the sections *Poissonella* and *Burckiiplanchonella,* no differences exist, as has been pointed out under Group I in this publication. Both sections are linked by *P. baillonii* (Zahl.) Dubard, *P. contermina* Pierre, and *P. lauracea* (Baillon) Dubard. In the section *Burckiiplanchonella,* species with a reticulate nervation are inserted, and in the section *Pierriplanchonella* species with a transverse nervation of the tertiary nerves. As will be pointed out below, this is not sufficient reason for keeping the two sections apart.

Engler's subdivision, which is based on the different types of nervation, is of no use as there are many intermediate forms between those mentioned by him.

In the present study it is refrained from establishing sections, though for convenience sake, 7 different groups of mutually allied species have been distinguished. These do not represent taxonomic groups as they are linked up in several ways.

In trying to subdivide this genus into different groups, the main feature which appeared to be useful to carry out this subdivision is the type of nervation:

1. A transverse tertiary nervation (e. g. *P. firma* (Miq.) Dubard).
2. A reticulate tertiary nervation (e. g. *P. obovata* (R. Br.) Pierre).
3. A tertiary nervation in which the nerves are parallel to the secondary nerves (e. g. *P. sandwicensis* (A. Gray) Pierre and *P. keyensis* H. J. Lam.

On closer view it is clear that by a certain arrangement of the species a continuous series between these three types is possible, e. g.:

nitida - tenuipes - mindanaensis - obovoidea - peekelii - micronesica - solida - sandwicensis

and:

nitida - xerocarpa - laurifolia - dies-reginae - keyensis.

In these two series one finds a series running from transverse to parallel tertiary nervation, but in the following two there is a gradual change from transverse to reticulate tertiary nervation:

nitida - mindanaensis - obovata - clemensii

and:

nitida - ledermannii - lanatifolia - lasiantha - vieillardii - baillonii.

In *P. obovata* (R. Br.) Pierre one even finds leaves with an indistinct transverse tertiary nervation and leaves with a distinct but lax reticulate nervation parallel to the secondary nerves. These few examples may show that the use of one feature is insufficient to distinguish groups, and therefore one has to use a complex of features. As everywhere else in the Sapotaceae, *Planchonella* shows the phenomenon that single features return at different places in the system and in numerous combinations with other single features. This makes a separation in sections not only difficult but in this case also impossible.

Combining the phyllotaxis, the type of the tertiary nervation and density of these nerves, the type of inflorescence, the habit of the flowers, the length of the pedicels, the indumentum of the inner side of the calyx, the shape of the corolla-lobes, and staminodes, the presence of a disk, and details of the fruit may provide the basis for a distinction of the following 7 groups of species.

Group 1.

Species 1—18. *New Caledonia* (16 endemic), *Australia* (1), *New Hebrides* and *Solomons* (1).

This Group comprises species almost entirely restricted to New Caledonia, in which the leaves are almost always conferted at the tips of the branchlets, a character also found in the second but not in the other groups, at least not so distinctly developed as in Group 1. The main difference between this group and the other groups is the tertiary nervation, which is stout, reticulate but lax. With Group 2, 5, 6, and 7 it has in common the reticulate nervation. A distinctly thickened margin which is rather conspicuous in *P. contermina* Pierre and *P. lauracea* (Baillon) Dubard, also is a distinct feature. The flowers are rather large and mostly solitary, and the largest flowers in *Planchonella* are found in this group, e. g. in *P. baillonii* (Zahlbr.) Dubard. A minor detail is the indumentum of the pedicels and leaves, which is either greyish, greyish-green or dark reddish ferruginous, a character not often found in other groups. Linked with this is the small angle between the secondary nerves and the midrib, and this combination of features allows a further subdivision into two sections [1]), the first of which comprises species with narrow leaves, large solitary flowers, a greyish-green or greyish indumentum and very few (3—6) secondary nerves (in *P. baillonii* 12—22), ascending at an angle of 10°—25° (—45°).

The second section comprises species with obovate to linear or spatulate leaves, medium-sized flowers, which are either solitary or in few-flowered clusters, a reddish ferruginous often pilose indumentum of leaves, pedicels and outside of calyces and the number of secondary nerves (4—)7—26, ascending at an angle of (25°—)35°—85°. *P. contermina* Pierre, *P. cinerea* (Pancher) van Royen and *P. lauracea* (Baillon) Dubard of this section are more or less tending towards the first one, both in the shape of their leaves, which sometimes approaches the narrow leaftype of e.g. *P. leptostylidifolia* Guill., and in the number of secondary nerves.

Provisionally, *P. saligna* Moore has been inserted in this group, but some details rather point at *Pouteria*. The absence of fruits makes it impossible to decide upon this question. *P. laetevirens* (Baillon) Pierre, an aberrant species, as is pointed out by Dubard, is also provisionally inserted here.

Group 1 is related to various other groups, i. e. by way of *P. cinerea* (Pancher) van Royen and *P. contermina* Pierre to the *P. obovata*-group (Group 6) and to Group 2 by the conspicuous tertiary reticulate nervation. Through *P. vieillardii* (Baillon) Guillaumin it is related to Group 3.

Group 2.

Species 19—22. *Australia.*

This Group comprises a small number of species from Australia and tallies with Dubard's section *Hormogyne.* The leaves are scattered and the tertiary nervation in many respects resembles that of *P. obovata* (R. Br.) Pierre, though it is generally less dense, while the nerves are stouter, and therefore recalls the nervation of e. g. *P. dictyoneura* (Baillon) Pierre of Group 1. In the shape of the leaves it resembles some Australian species of Group 6 (e. g. *P. dugulla* (Bailey) van Royen and *P. pohlmaniana* (F. v. M.) Pierre). The flowers are either solitary or in few-flowered clusters, and have a long slender pedicel which is found also in some species of Group 4 (e. g. *P. singuliflora* (White & Francis) van Royen and *P. ralphiana* (F. v. M.) Dubard), species which are also found in

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[1]) The word section has no taxonomic value here.

Australia but differ from the present group by the transverse tertiary nervation. As in Group 1, the calyx is glabrous within and the inner sepals are fimbriate along the margin, a detail that points also to *P. obovata* (R. Br.) Pierre. The corolla is long exserted and this character again points to the first group. The most striking feature in the flower is the shape of the staminodes, which are pyramidal-oblong, obliquely truncate and infundibuliform at the top, a feature found nowhere else in *Planchonella.* The disk in this group is either free or adnate to the ovary.

Group 3.

Species 23—29, *New Caledonia* (6 endemic), *New Guinea* (1 endemic).

This group, together with Group 4 and 5 and some species of Group 6, is characterised by transverse tertiary nerves. *P. dubia* in this group and *P. vieillardii* (Baillon) Guill. of Group 1 link Group 3 to Group 1 as in *P. vieillardii* the tertiary nervation is reticulate, though not so conspicuous as in the other species of Group 1. Moreover, the tertiary nervation is dense, and sometimes a few transverse nerves are present. In *P. dubia* (P. & S.) van Royen, which has a closely similar tertiary nervation, a reticulate nervation is never found, though the transverse nerves may anastomose. In Group 3 the number of flowers in each fascicle is larger and the calyx is provided with an indumentum within, this feature being the single one that always separates Group 3 from Group 1. In Group 3 two trends can be detected, viz., one trend with spatulate to obovate-oblong and obtuse leaves, another with obovate-oblong to elliptic-oblong, acute to acuminate leaves, comprising *P. dubia* (P. & S.) van Royen, *P. lanatifolia* van Royen, and *P. sebertii* (Pancher) Dubard and in the latter *P. azou* van Royen, *P. rubicunda* (Pierre) Dubard, *P. lucens* van Royen and *P. novocaledonica* Dubard, of which the last-named formed the section *Egassia* in Dubard's publication of 1912, with *P. lucens* differing from the other species in *Planchonella* by the short scar of the seed. In this respect they approach the genera *Sideroxylon* and *Mastichodendron* with their circular, basal scar.

The present group is distinguished from the next one by the hairy inner side of the sepals. In Group 4, however, *P. firma* (Miq.) Dubard, *P. sussu* (Engl.) H. J. Lam and *P. lamprophylla* (Krause) H. J. Lam also show this feature, but the long petioles and pedicels separate these three from the short-petioled and -pedicellate Group 3. This again emphasises the reticulate affinities of these groups which prevent a practical natural subdivision.

Obviously *P. firma, P. sussu* and *P. lamprophylla* do not belong to Group 3 since the shape of the leaves, and, as has been said before, the length of petiole and pedicel, the different type and colour of the indumentum (brownish ferruginous against reddish ferruginous) and the presence of an adnate disk, indicate their relationship with the species of Group 4.

Group 4.

Species 30—57. *SE Asia to Polynesia and Australia.*

In this group, species covering an area extending from southeast Asia to Samoa and Australia, with one species on New Caledonia, are included.

At a first glance it is difficult to detect in this group species which show a clear relationship. Only when using a combination of characters — a combination which is slightly different in the different sections of this group — of which the transverse tertiary nervation is the main feature, is it possible to distinguish the 28 species as a group, different from the others.

The transverse tertiary nervation used here as the main distinguishing feature, is found also in Group 3 and 5, but the brownish ferruginous pubescence (reddish ferruginous, often woolly pubescence in Group 3), and the often truncate corolla-lobes, separates Group 3 and 4. Additional differences are the short petioles and pedicels in Group 3, in which leaves and flowers are almost sessile, while in Group 4 the flowers are distinctly pedicellate and the leaves longer petiolate. The number of flowers in each cluster is on the whole larger in Group 4 than in Group 3, in which the flowers are mostly solitary. Also the shape of the leaves is quite different in many cases, in Group 3 the leaves being widest above the middle, in Group 4 at or below the middle. Again it must be emphasized that the groups distinguished here are by no means natural, no clear evolutionary trend being evidently involved. Only series of gradual changes in morphological characters are to be reported, and when a more or less distinct larger discontinuity was found — either regarding one character or a combination of several — this was gratefully made use of.

In Group 4 some different sections can be traced, each more or less distinct but still closely connected. Two main sections have been distinguished, one with the tertiary nervation distinctly transverse which considerably outshows the interjacent reticulate nervation, and a second comprising species with few transverse tertiary nerves in their leaves and an interjacent reticulate nervation which considerably outnumbers the transverse nerves. As a sideline to this second section those species are included which possess a tertiary nervation which in its ultimate form is almost completely parallel to the secondary nerves and in which the corolla-lobes are rounded. This line comprises (in the order indicated) *P. torricellensis* (Schum.) H. J. Lam, *P. krausei* H. J. Lam, *P. rigidifolia* (Krause) H. J. Lam, *P. dies-reginae* van Royen and *P. keyensis* H. J. Lam.

In the first group of species with the transverse tertiary nervation outnumbering the interjacent veinlets, different trends are distinguished. First there is a group of species comprising *P. firma* (Miq.) Dubard, *P. foxworthyi* (Elmer) H. J. Lam, *P. macrocarpa* van Royen, *P. sussu* (Engler) H. J. Lam, *P. lamprophylla* (Krause) H. J. Lam, *P. maculata* van Royen and *P. papyracea* van Royen characterized by a pubescent inner side of the calyx, a disk completely adnate to the ovary, a short pedicel and truncate corolla-lobes. In the above-mentioned sequence also, the number of transverse tertiary nerves decreases but yet considerably outnumbers the interjacent reticulate veinlets. Closely related to these 7 species, yet differing in the glabrous inner side of the calyx and the rounded corolla-lobes, but still with a distinct transverse tertiary nervation, are *P. nebulicola* H. J. Lam, *P. moluccana* (Burck) H. J. Lam, *P. macropoda* H. J. Lam, *P. monticola* (Krause) H. J. Lam and *P. hochreutineri* H. J. Lam. In the last-named species the tertiary nervation is less dense than in the other species but is still more conspicuous than the reticulate veinlets in between. This species is also aberrant in the large, petaloid staminodes, and one might suspect it as representing a *Pouteria.* As fruits are unknown this can not be decided now.

A more or less separate group of species is formed by *P. vrieseana* (Burck) Dubard, *P. kaernbachiana* (Engler) H. J. Lam, *P. cyclopensis* van Royen and *P. anteridifera* (White & Francis) H. J. Lam (mainly restricted to New Guinea), being characterized by fruits which are much larger than is generally known in *Planchonella* (except *P. sphaerocarpa* (Baillon) Dubard), being at least 4 cm. In the other species of Group 4, as far as fruits are known, they are shorter than 3 cm (except in *P. macropoda* H. J. Lam, var. *multinervis* van Royen where they reach a length of 4 cm).

Other differences between these four species and the others of the present group are the large number of flowers in each cluster, the curved stamens in bud, the rounded corolla-lobes, the long pedicels and the large leaves. The tertiary nervation is transverse but the interjacent reticulate nervation is more crowded than in the above-named 12 species. It shows a tendency to be parallel to the secondary nerves and sometimes slightly recalls the tertiary nervation in the species of Group 1. Regarding these characters one could be inclined to consider them representatives of a separate genus, as has been done by Pierre, who transferred Burck's *Sideroxylon vrieseanum* to *Siderocarpus* Pierre. However, as was already pointed out by Dubard, that genus is not tenable, though the characterizing details are rather striking.

The last 6 species, all restricted to Australia, can be brought to two sections, one of which has pedicels shorter than the petioles, flowers in clusters and corolla-lobes truncate, comprising *P. xerocarpa* (F. v. M.) H. J. Lam, *P. laurifolia* (Rich.) Pierre, and *P. queenslandica* van Royen which, in this order, show a decrease of the transverse tertiary nerves and an increase of the reticulate venation in between. In *P. queenslandica* only a very few transverse nerves are left and those are distinctly outnumbered by the reticulate tertiary nerves. The other three species, which comprise the second section, *P. singuliflora* (White & Francis) van Royen, *P. ralphiana* Dubard and *P. brownlessiana* (F. v. M.) van Royen, are characterized by pedicels longer than the petioles, solitary or rarely binary flowers, and rounded corolla-lobes (subtruncate in *P. brownlessiana*), but as the fruit is unknown in these species it is not certain whether they belong to *Planchonella.* These three species also have a distinct transverse tertiary nervation but in *P. singuliflora* the reticulate tertiary nervation far exceeds the number of transverse tertiary nerves.

The above-mentioned species, constituting Group 4, show affinities to the other groups. The transverse tertiary nerves connect it with Group 3. *P. torricellensis* (Schum.) H. J. Lam, *P. firma* (Miq.) Dubard and allied species, *P. nebulicola* H. J. Lam and allied species, and *P. vrieseana* (Burck) Dubard, and allied species, link up Groups 4 and 5, especially *P. nitida* of Group 5, in which the flowers are borne in clusters along leafless or almost leafless axillary shoots, a character which in Group 4 is to some extent met with in several species, such as *P. firma, P. xerocarpa* (F. v. M.)

H. J. Lam and *P. torricellensis.* Foliar details similar to those of *P. nitida* (Bl.) Dubard are found, e. g. in *P. anteridifera* (White & Francis) H. J. Lam and *P. torricellensis* (Schum.) H. J. Lam, and therefore Group 4 is rather indistinctly separated from Group 5. They are only kept apart on account of the type of inflorescence and the phyllotaxis. In Group 4 the clustered, axillary inflorescence and alternate leaves are dominating, in Group 5 the clustered flowers along a leafless or almost leafless axillary shoot, with often (sub-)opposite leaves, are the most pronounced features. Group 5 is intermediate between 4 and 6, demonstrating again the close interrelationship of the groups and the almost gradual change in characteristics.

Group 5.

Species 58—68· *New Guinea* (7), *Cont. Asia* (2), *Malaysia* (1), *South America* (1).

Many species of this small group of 11 species are found in New Guinea but *P. nitida* (Bl.) Dubard has an area extending over the main part of the Malaysian region, and *P. oppositifolia* (Ducke) van Royen in South America. It is mainly characterized by either (sub-)opposite or more rarely alternate leaves and by an arrangement of fascicles (or solitary flowers) in the axils of bracts (sometimes in small leaf) along axillary shoots.

Though these characters seem to be distinct, some species of this group are very difficult to distinguish from those of Groups 3 and 4, e. g. *P. clementis* H. J. Lam, *P. densinervia* (Krause) H. J. Lam and *P. ledermannii* (Krause) H. J. Lam. In these species the flowers are borne in axillary fascicles only, and only in *P. densinervia* (Krause) H. J. Lam and *P. ledermannii* (Krause) H. J. Lam are the leaves subopposite or more rarely alternate. Mainly because of the tendency towards having opposite leaves they have been inserted here. *P. clementis* H. J. Lam closely resembles *P. sebertii* (Pancher) Dubard, and could as well be inserted in Group 3, but on account of its closer resemblance in some points to species of Group 4, e. g. the brownish to yellowish pubescence of petioles and pedicels, and its locality (New Guinea), it is included in Group 4. These three species, therefore, form a group of species transient into those of Group 3. The other 9 species are not distinctly distinguishable from Group 4, since in that group also, species with flowers in clusters along an axillary shoot, are found, albeit rarely, e. g. in *P. firma* (Miq.) Dubard and *P. sussu* (Engler) H. J. Lam, etc., but on account of the opposite or subopposite leaves and the second type of inflorescence, which occurs in Group 5 rather than the axillary clusters which are a consistent feature of Group 4, were these 9 species kept apart from Group 4.

It must be remembered here that out of the 12 species in this group, fruits are known in *P. nitida* (Bl.) Dubard, *P. suboppositifolia* H. J. Lam and *P. oppositifolia* (Ducke) van Royen only, and therefore it is quite possible that the remainder do not represent species of *Planchonella* at all but might represent species of *Pouteria* as e. g. "*Planchonella*" *lauterbachiana* with opposite leaves, which, if no fruits were known, would have been inserted in this group on account of the opposite leaves and also by its inflorescence. However, when the fruits became available it appeared to be a *Pouteria* and we have to regard with great doubt the position of the 9 other species in Group 5, of which no fruits are known. If they all represent *Pouteria* species only *P. nitida, P. suboppositifolia* and *P. oppositifolia* are left and had better be inserted in Group 4 next to *P. torricellensis* (Schum.) H. J. Lam.

Group 5 shows affinities towards Groups 3, 4 and 6. The affinities towards Group 3 have already been indicated above and partly also those to Group 4. With the latter it is also linked by *P. torricellensis* which shows the same type of tertiary nervation, i. e. a few transverse ones and a reticulate nervation in between. Also in *P. torricellensis* clusters of flowers along an axillary shoot are found, even more pronounced than in e. g. *P. firma* and *P. sussu*, etc., but as this type is rare and the axillary clusters are more frequent, *P. torricellensis* has been inserted in Group 4.

To Group 6 the present one is related via *P. kaniensis* (Krause) H. J. Lam, *P. sarcospermoides* H. J. Lam and *P. suboppositifolia* H. J. Lam in which the tertiary nervation resembles that of *P. obovata* (R. Br.) Pierre and *P. obovoidea* H. J. Lam etc., but the quite different details of the flower separate Group 5 from 6. *P. sarcospermoides* closely resembles *P. lauterbachiana* H. J. Lam and, as has already been pointed out, it might well represent a *Pouteria.*

P. suboppositifolia is also an intermediate species to Group 6 on account of its foliar details; the tertiary nervation, though transverse, tends to be parallel to the secondary one, a feature found in *P. solida* van Royen of Group 6 as well. The inflorescence in *P. suboppositifolia* is reduced to one or two flowers in each cluster, a character only rarely found in Group 5 but also in some species of Group 4 (*P. singuliflora* (White & Francis) van Royen, *P. ralphiana* (F. v. M.) Dubard and *P. brownlessiana* (F. v. M.) van Royen).

Group 6.

Species 70—96. *Widely distributed.*

This group of 27 species which includes the highly variable and widely distributed *P. obovata* (R. Br.) Pierre, extends its area across the whole known Asian area of *Planchonella,* while one species, *P. guianensis* van Royen, is found in the northern and eastern parts of South America. It is mainly characterised by a reticulate nervation, though some to many transverse nerves may be present, as well as by fimbriate margins of the inner sepals. The pubescence of pedicels, petioles and leaves is often whitish or yellowish, rarely ferruginous, contrary to the colour of the pubescence in the other groups in which mainly a ferruginous pubescence is found.

Also in this group one can find a series running from a reticulate tertiary nervation of the leaves to a tertiary nervation consisting of nerves parallel to the secondary nerves (*P. sandwicensis* (A. Gray) Pierre), as follows:

obovata - peekelii - obovoidea - micronesica - solida - sandwicensis·

In Group 4 this series is found running from a transverse tertiary nervation to the type of *P. sandwicensis* which in group 4 is replaced by *P. keyensis* H. J. Lam.

Group 6 is related to the other groups in various ways. To Group 4 it is related by way of *P. velutina* (Elmer) H. J. Lam, with its var. *sarcocarpa* (Merrill) H. J. Lam and *P. mindanaensis* H. J. Lam, though the latter shows a tertiary nervation aberrant from the remainder of the genus. These two species show a transverse tertiary nervation, but on account of their type of fruit they have been inserted in this group.

Towards Groups 1 and 2 it is related by *P. obovata* (R. Br.) Pierre, *P. costata* (Endl.) Pierre, *P. chartacea* (F. v. M.) H. J. Lam etc. and by *P. myrsinoides* (Cunn.) Blake respectively. The so-called "*oxyedra*-group" of Lam, 1942, is inserted here since no characters can be found which really separate that group from the "*obovata*-group". Especially in their tertiary nervation the two groups are linked by some intermediate forms e. g. *P. microphylla* Pierre, *P. reticulata* (Baillon) Pierre, *P. pohlmaniana* (F. v. M.) Pierre and *P. australis* (R. Br.) Pierre.

To Group 5 the 6th group is linked by *P. obovata, P. kaniensis* (Krause) H. J. Lam, *P. suboppositifolia* H. J. Lam, the tertiary nervation changing from reticulate to transverse, though it runs almost parallel to the secondary nerves in the two last-named species.

Group 7.

Species 97—99. *New Caledonia.*

This small group of 3 New Caledonian species is to be distinguished by a tertiary nervation consisting of small alveoles at the upper surface showing a honeycomb-like configuration. Since not of all fruits are known it must be of doubt as to whether these species really belong to *Planchonella* and do not represent a separate genus. On the other hand the honeycomb configuration of the upper leaf surface is also found in some species of Group 4, e. g. in *P. queenslandica* van Royen, *P. ralphiana* (F. v. M.) Dubard and *P. laurifolia* (Rich.) Pierre, but there, transverse nerves are present, which is not the case in the three species of Group 7.

Geography. *Fig. 2—5.*

The area covered by *Planchonella* reaches from the Seychelles over the southern parts of India towards southern China, Okinawa, the Caroline Islands, Samoa Islands, the Tuamotu Archipelago, the northern and eastern parts of Australia, the Malay Archipelago and the Andaman and Nicobar Islands, while one species is found on the Hawaiian Islands and two species are known to occur in South America.

The largest area is covered by *P. obovata* (R. Br.) Pierre, *P. linggensis* (Burck) Pierre, *P. firma* (Miq.) Dubard, *P. nitida* (Bl.) Dubard, *P. costata* (Endl.) Pierre, *P. moluccana* (Burck) H. J. Lam, *P. torricellensis* (Schum.) H. J. Lam and *P. obovoidea* H. J. Lam, the respective areas diminishing in size in that sequence. Of these, only *P. costata* (A. Gray) Pierre is scattered over the small archipelagoes in the eastern part of the generic area, while the other species are restricted to the western parts, reaching their limit slightly east of New Guinea, and the northern parts of Australia. This distribution already indicates that *Planchonella* is a typical

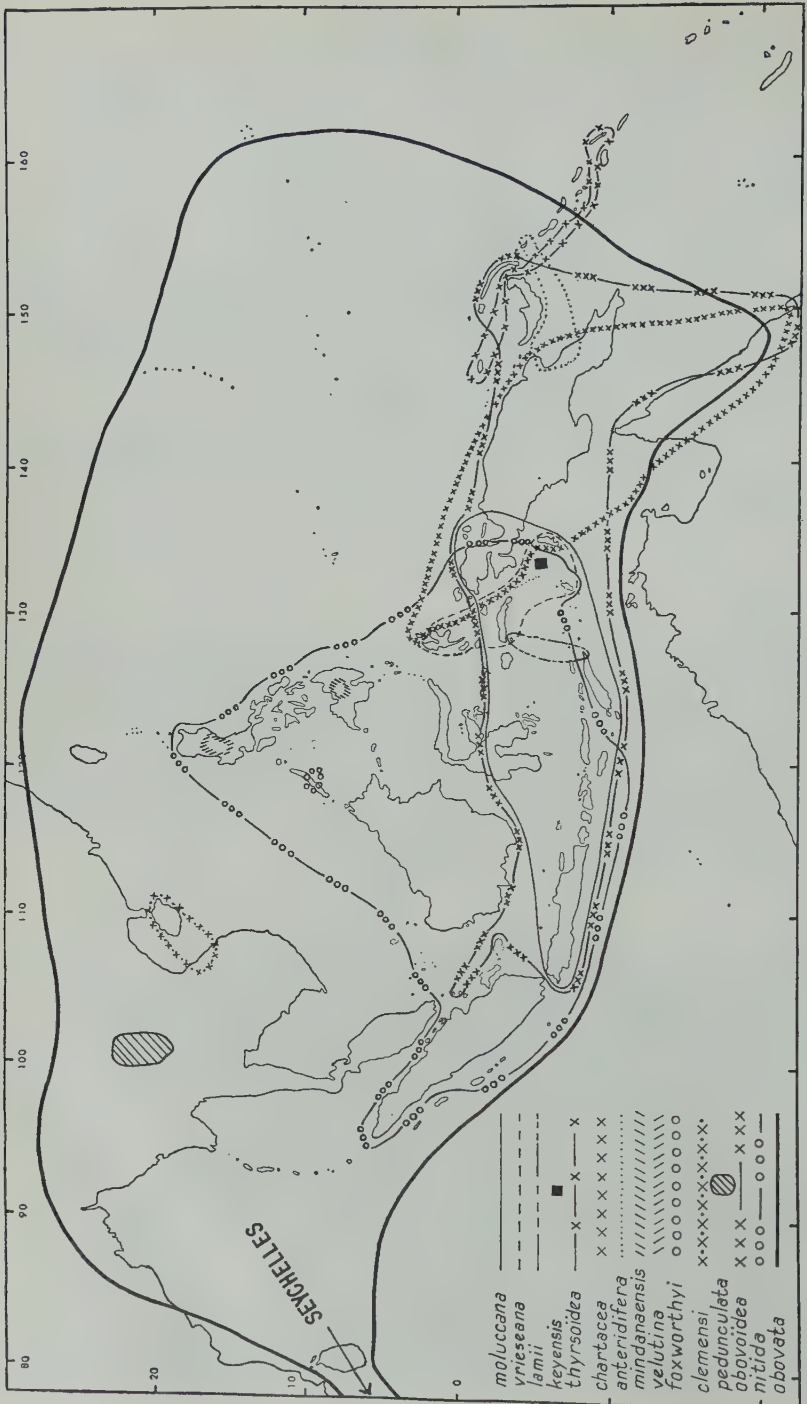


Fig. 2. Distribution of some species of the genus Planchonella.

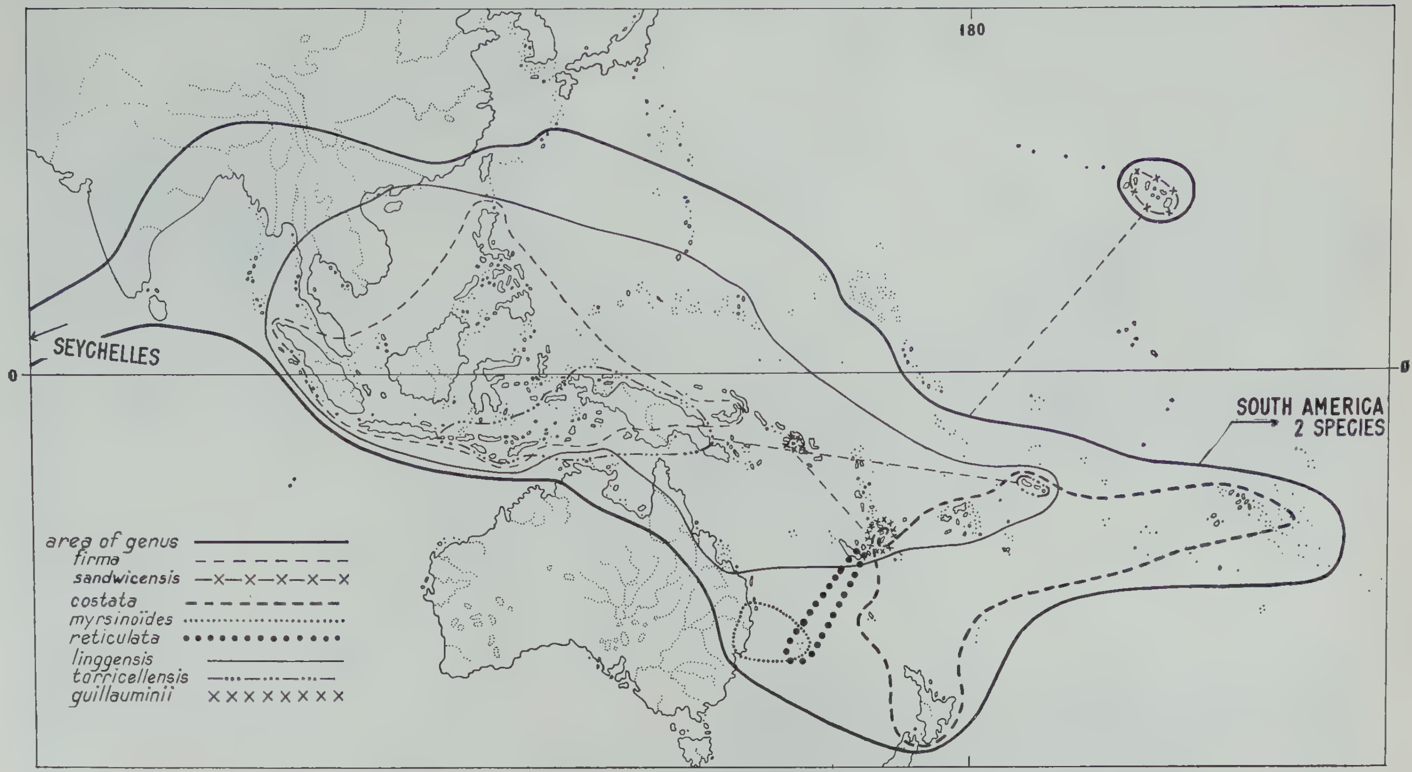


Fig. 3. Distribution of the genus Planchonella and of some species.

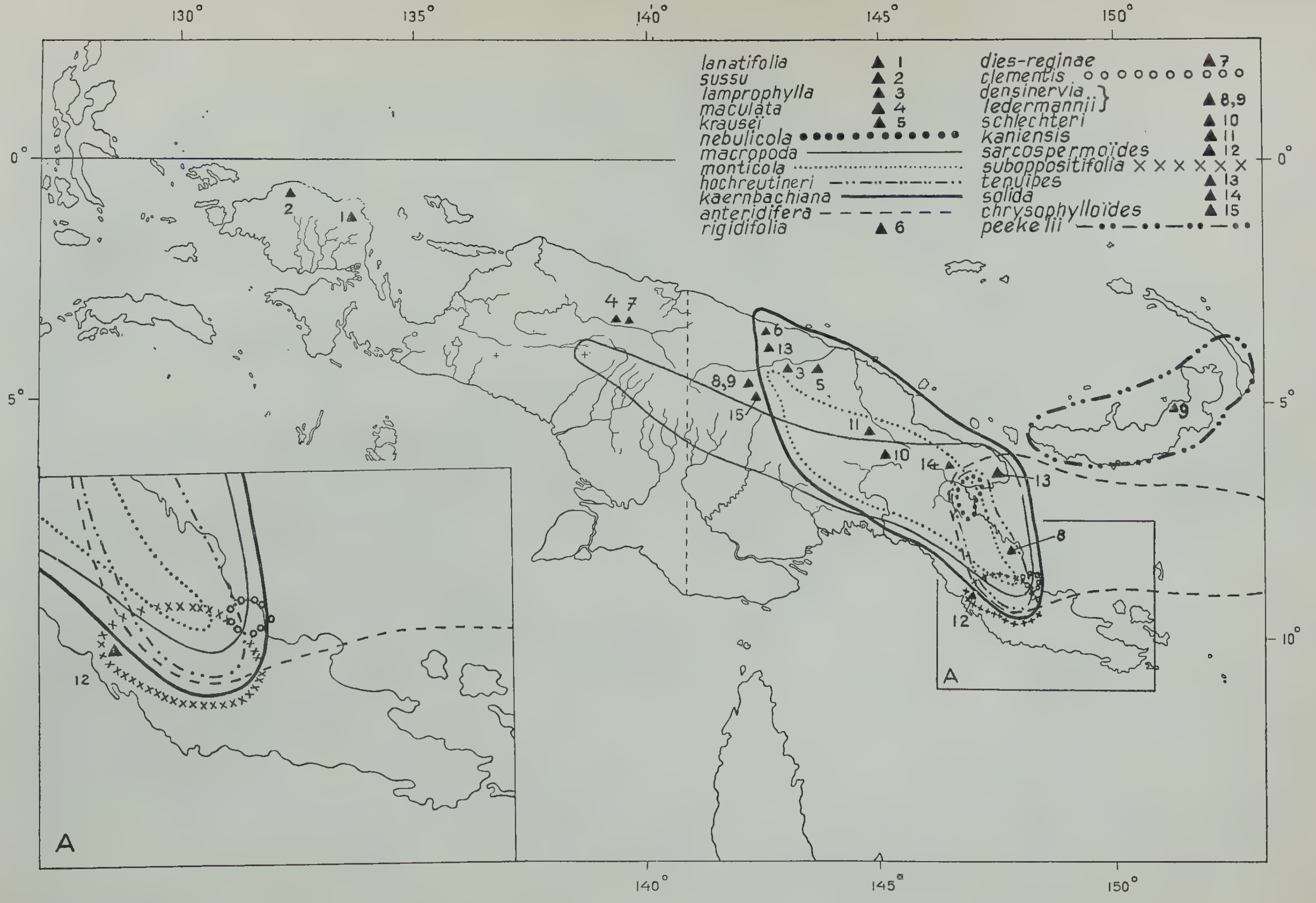


Fig. 4. Distribution of some species of the genus Planchonella.

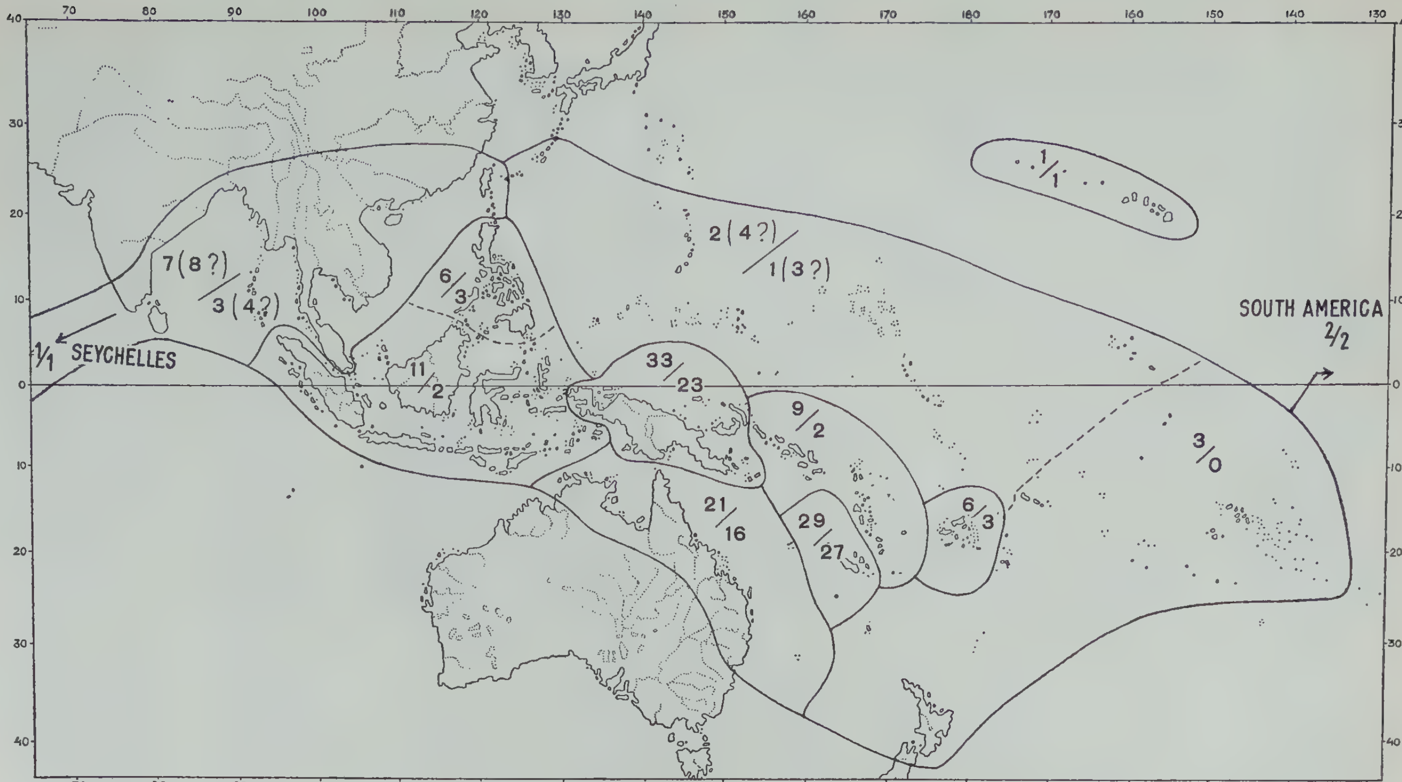


Fig. 5. Map showing the number of species in the genus Planchonella against the number of endemics in the separate, arbitrarily chosen, regions. Numbers above the line show the number of species, those below the line represent the number of endemics. Numbers to which a question-mark is added represent the number of the species in which the dubious species also are included.

Note: In the Hawaiian Islands the area of the genus does not cover the western islands.

Old World genus and this is another reason to separate it from Pouteria, the centre of which being, apparently, South America.

This impression is deepened when the distribution of the other species is studied. A list of their distribution is given below (the number of endemics between brackets):

Continental Asia	4	(2)	Caroline Islands	1	(1)
Sumatra	1	(0)	New Hebrides	2	(1)
Philippines	3	(3)	Australia	17	(15)
Borneo and Java	1	(0)	New Caledonia	28	(26)
Celebes	0		Fiji	3	(3)
Moluccas	4	(3)	Hawaiian Islands	1	(1)
New Guinea	29	(25)	South America	2	(2)

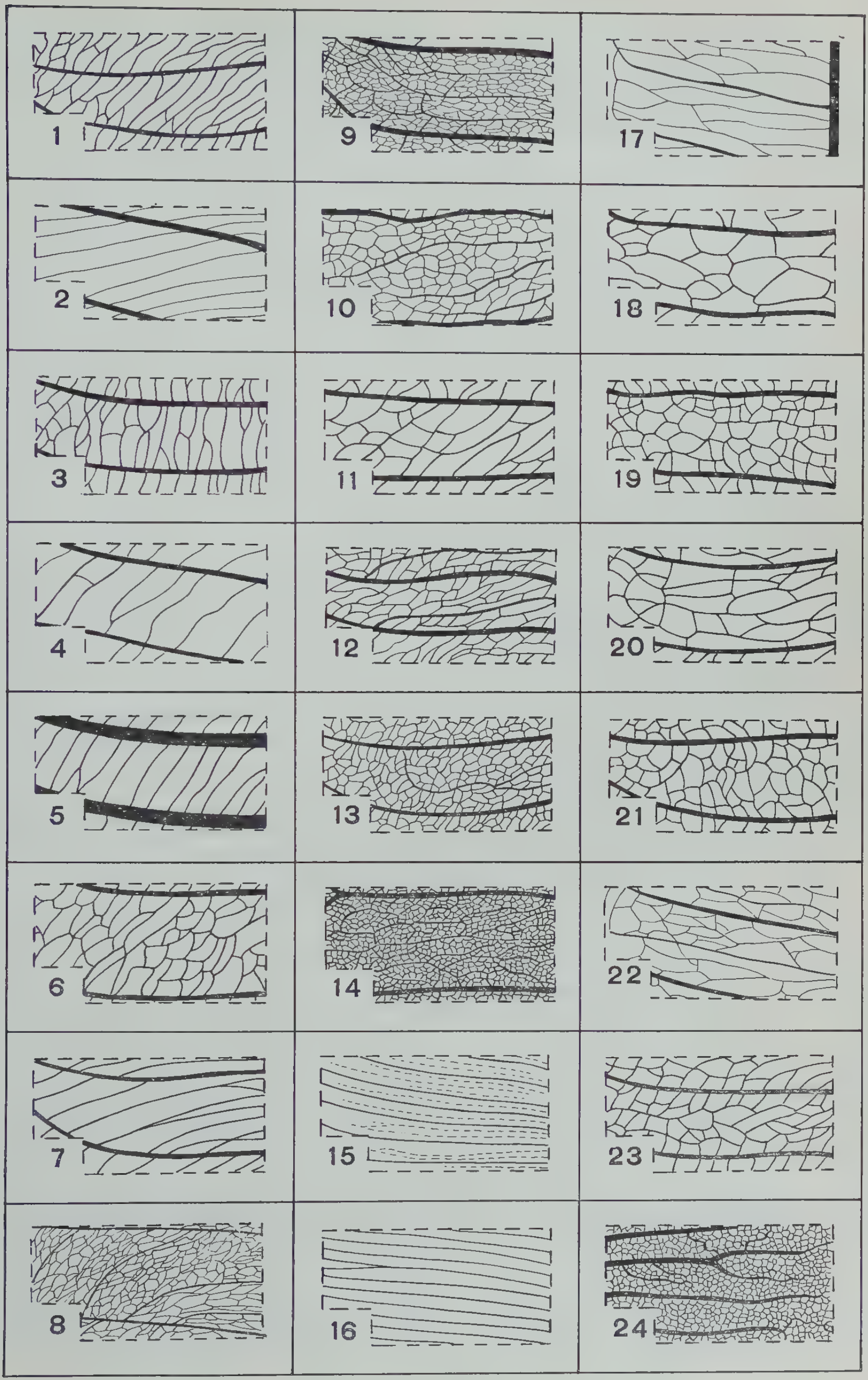
From these details given above it is evident that in New Guinea, the northern, northeastern and eastern parts of Australia and New Caledonia most of the species are found, and that this area might be regarded as the centre of the genus *Planchonella.*

The centre thus apparently being in this region it must be added that the three areas mentioned are isolated "islands". The northern to eastern parts of Australia, though part of a continent, might easily be regarded as an "island", isolated by seas, deserts and climatological factors, though to the south this "island" is more open to a penetration by other floras — e. g. the antarctic-american flora and, reversely, possesses a flora which may give rise to northward invasions. The isolation of these "islands" therefore may have given rise to a high number of endemics and this number may lead to an overestimation of these parts as the primary centre of origin of the genus. It seems possible as well to regard these "islands" as secondary centres inside the area of widely distributed species.

However this may be, the data provided by the endemics strengthen the opinion that *Planchonella* is an essentially Australasian genus with its main (secondary ?) centre in New Guinea, Australia and New Caledonia. This opinion was also a reason to separate *Planchonella* from *Pouteria* on the assumption that the latter is an essentially American genus that fans out over New Caledonia, Australia, New Guinea, Malaysia and the Asiatic continent into the whole area of *Planchonella.* This in itself is a curious problem as it is not often found that an American genus reaches as far as the Asiatic continent.

That the number of species in New Guinea is less than that in New Caledonia is probably due to the poorer exploration of New Guinea and it is probable that the number of species from New Guinea will rise considerably in the future. On the other hand, several endemic Sapotaceous genera in New Caledonia point at other possible causes.

Fig. 6. Different types of tertiary nervation in Planchonella. 1. P. velutina, 2. P. ralphiana, 3. P. kaernbachiana, 4. P. sphaerocarpa, 5. P. sebertii, 6. P. vieillardii, 7. P. obovoidea, 8. P. nitida, 9. P. kaniensis, 10. P. dies-reginae, 11. P. oppositifolia, 12. P. solida, 13. P. peekelii, 14. P. micronesica, 15. P. sandwicensis, 16. P. keyensis, 17. P. baillonii, 18. P. contermina, 19. P. myrsinoides, 20. P. obovata, 21. P. pohlmaniana, 22. P. linggensis, 23. P. mindanaensis, 24. P. balansana.



Remarkable in the distribution of the genus is the rather small number of species in the Malaysian area. The species that cover a large area are found in those regions, whereas endemics are not or almost not present, the latter being confined to the eastern parts of the area. This also might point to a Papuan-Australian secondary centre of the genus.

Directions for the use of the keys and the taxonomic part. *Fig. 6.*

In the present publication only those publications and synonyms are referred to which are of predominant importance. For the others we may refer to Baehni's publication of 1942 and to Lam's papers.

The key to the species has been split up into a number of smaller keys which afford a more convenient method for identification. The main key is based on some suitable characters and in this the other keys are referred to. In dubious cases both ways can be followed. Thus e. g. *P. obovata* (R. Br.) Pierre is found in such cases in several places and keys. The smaller keys are indicated as sections, but a taxonomical level should not be ascribed to this term.

Whenever, in these keys, the words pubescent or pubescence are used, all different types occuring in this genus are meant, e. g. the reddish woolly pubescence in some New Caledonian species and also the whitish sericeous pubescence in *P. obovata* and its allies. The pubescence referred to is always that of the mature organs, but in a few instances, e. g. *P. guillauminii* H. J. Lam the pubescence of pedicels in fruit only had to be regarded.

The other terms used in this publication are as far as possible conformable to those used by Lam in 1925, p. 2—4, with some exceptions. The length of the leaf is the length from the apex of the limb to the base of the petiole, thus including both blade and petiole. The proportion of length and width of adult leaves means the length of blade plus petiole to the width. Minutely crested, a term often used here, means a low and (or) narrow crest over the whole length of the organ.

The number of secondary nerves is that at one side of the midrib.

The different types of tertiary nervation, which are classified in 3 groups, are pictured in *fig. 6,* to which may be referred here. Sometimes it is hard to decide to which group the nervation belongs, and a few words may be useful for a correct interpretation with the help of the above-named figure. In some species the angle between the secondary and tertiary nerves is about 90° and in cases where this character is found together with a great number of tertiary nerves nobody will hesitate to indicate this type as transverse (*fig. 6, nrs 1—7*). The difficulties start when the number of transverse tertiary nerves diminishes and (or) when they tend to run more parallel to the secondary nerves. In the first case instead of the transverse tertiary nerves a reticulate nervation fills the space between the transverse nerves (*fig. 6, nrs 8—14*). When, in this case, some transverse nerves are still found next to a large mass of minutely reticulate nerves, these species are still included in the group with transverse nerves. The same has been done regarding those species in which the tertiary nerves are still running from one secondary nerve to the other but are almost parallel to the secondary nerves.

In those cases in which the leaves usually show a reticulate nervation but very rarely some transverse nerves (mostly near the margins, more rarely also near the midrib), the species concerned are included both in the group with a reticulate nervation and in that with a transverse nervation. However, in the secondary keys, the feature of some few transverse nerves in leaves with a generally reticulate nervation has sometimes been used to distinguish these species from those with a fairly consistent number of transverse nerves.

In some species the tertiary nerves are running exactly parallel to the secondary nerves from midrib to margin, e. g. in *P. sandwicensis* (Gray) Pierre and *P. keyensis* H. J. Lam (*Fig. 6 nrs 15—16*). These species have been incorporated in the group with a reticulate nervation (*Fig. 6 nrs 15—22*). If it is not obvious that the tertiary nervation is transverse or reticulate — in *P. mindanaensis* H. J. Lam only — this species is included in the transverse group. (*Fig. 6 nr 23*).

The place of insertion of the stamens has always been indicated in proportion to the total length of the corolla.

The collections indicated are only those which were not published in the papers by Lam and by Baehni, except in those cases in which few or a single collection only is known, and in cases of an incorrect previous identification. Of all species the type specimens have been indicated. All specimens mentioned were seen by me unless the contrary is stated.

The specimens collected in 1950 by Guillaumin, Hürlimann and Baumann have, with a few exceptions, been incorporated without the indication of the localities, as their specimens were not yet completely labelled. Only the indication: "New Caledonia, without locality", has been given in that case.

Details about colour of flowers and leaves, vernacular names and use etc. are in most cases derived from labels or from the literature unless the contrary is indicated.

The word *Pag.* after the name of a new taxon followed by a number refers to the page where the Latin diagnosis can be found.

In all figures dimensions are given in mm.

TAXONOMIC PART

Keys to the artificial groups:

1.a. Corolla ferruginously pubescent without 2
  b. Corolla glabrous without 3
2.a. Tertiary nerves transverse. *South America* **69. P. oppositifolia** (Ducke) van Royen
  b. Tertiary nerves reticulate. *Malaysia* . . . . . **56. P. ? keyensis H. J. Lam**
3.a. Secondary and tertiary nervation i.s. hardly conspicuous on either side GROUP A. (p. 255)
  b. Secondary and tertiary nervation distinct 4
4.a. Tertiary nervation transverse . . . . GROUP B. (p. 256)
  b. Tertiary nervation either longitudinal or forming an irregular, usually lax reticulation . . . . GROUP C. (p. 261)

GROUP A.

1.a. Secondary nerves 25—40. *New Caledonia* . **98. P. ? balansana** (Pierre) Pierre
  b. Secondary nerves 9—15 2

2.a. Leaves 1—3 by 0.3—1 cm, petioles 0.5—2 mm long. *New Caledonia* 99. **P. ? crebrifolia** (Baillon) Pierre
b. Leaves 4—18 by 1.4—5 cm, petioles 4—22 mm long 3
3.a. Pedicels 0.5—1.2 cm long 4
b. Pedicels 1.5—4 cm long 5
4.a. Juvenile leaves tomentose on either side, mature ones sometimes glabrescent above. *New Caledonia* . . . . 97. **P. baueri** (Montr.) Dubard var. **brevipedicellata** van Royen
b. Both juvenile and mature leaves glabrous. *New Guinea* 52. **P. krausei** H. J. Lam
5.a. Secondary nerves ascending at an angle of 35°—55°, tertiary nervation indistinct below. *New Caledonia* . . . . 97. **P. baueri** (Montr.) Dubard var. **baueri**
b. Secondary nerves ascending at an angle of 60°—90°, tertiary nervation distinctly prominent below. *New Caledonia* . . . . . 97. **P. baueri** (Montr.) Dubard var. **jacquiniaefolia** (Baillon) van Royen

GROUP B.

1.a. Flowers clustered, borne along a leafless or almost leafless axillary branchlet Section 1 (p. 256)
b. Flowers clustered or solitary, in the axils of leaves or their scars along long shoots 2
2.a. Mature leaves pubescent on one or either side, sometimes on the nerves only or on a small part of the leaf 3
b. Mature leaves completely glabrous 6
3.a. Mature pedicels glabrous 4
b. Mature pedicels pubescent 5
4.a. Sepals glabrous without, pubescent within. *Australia* 32. **P. macrocarpa** van Royen
b. Sepals pubescent without, glabrous within. *Bali to Samoa* 53. **P. torricellensis** (Schum.) H. J. Lam
5.a. Sepals pubescent without, glabrous within . . . Section 2 (p. 257)
b. Sepals pubescent on either side . . . . Section 3 (p. 258)
6.a. Mature pedicels glabrous 7
b. Mature pedicels pubescent, sometimes sparsely so 9
7.a. Sepals glabrous without. *Australia* . . . . . 32. **P. macrocarpa** van Royen
b. Sepals pubescent without, sometimes sparsely so 8
8.a. Sepals glabrous within . . . . Section 4 (p. 259)
b. Sepals pubescent within. *Australia* 50. **P. singuliflora** (White & Francis) van Royen
9.a. Sepals glabrous without, pubescent within. *New Guinea* 55. **P. dies-reginae** van Royen
b. Sepals pubescent without, sometimes sparsely so 10
10.a. Sepals glabrous within . . . . Section 5 (p. 260)
b. Sepals pubescent within . . . . Section 6 (p. 260)

Section 1.

1.a. Mature leaves pubescent below 2
b. Mature leaves glabrous below 4
2.a. Leaves 22—44 by 8—13 cm, abruptly narrowed at base, secondary nerves 18—26; pedicels 3—5 mm long. *Manus and Solomons* . . . 61. **P. thyrsoidea** White
b. Leaves 7—17.5 by 3—7 cm 3
3.a. Dry leaves brown above, petioles 14—22 mm long; pedicels 5—10 mm long. *New Guinea* . . . . 66. **P. kaniensis** (Krause) H. J. Lam
b. Dry leaves olivaceous above, petioles 3—10 mm long; pedicels 0—2 mm long. *New Guinea* . . . . 63. **P. schlechteri** (Krause) H. J. Lam
4.a. Leaves 21—26 by 7.5—9 cm, secondary nerves curved; inflorescence-bearing shoots 1—2 cm long, bracts ovate-lanceolate, 1—2 by c. 1 mm, rachis yellowish-ferruginous sericeous. *New Guinea* . . . . 67. **P. sarcospermoides** H. J. Lam
b. Leaves 4—21 by 2—10 cm, but if larger the secondary nerves straight; inflorescence-bearing shoots 6—12 cm long, bracts none, rachis glabrous . . 5

5.a. Tertiary nervation sparse and inconspicuous, close to the midrib almost perpendicular to it, petioles 7—15 mm long, glabrous. *Southern China and northern Indochina* . . . . 62. **P. pedunculata** (Hemsley) H. J. Lam & D. A. Kerpel
b. Tertiary nervation dense, distinct and (or) close to the midrib almost perpendicular to the secondary nerves. *Malaysia to Australia and Samoa* . . . 6
6.a. Mature fruits ferruginously puberulous. *New Guinea* 33. **P. sussu** (Engler) H. J. Lam
b. Mature fruits glabrous except sometimes for a ring of hairs at the base of the style and of the fruit 7
7.a. Fruits truncate and provided with a ring of hairs at the base of the style, pericarp crustaceous 8
b. Fruits obtuse or rounded, glabrous at the base of the style, often oblique, pericarp ligneous but soft 10
8.a. Anthers obtuse, disk 10-lobed 9
b. Anthers mucronate, disk 5-lobed. *Australia* 45. **P. xerocarpa** (F. v. M.) H. J. Lam
9.a. Pedicels stout, 2—12 mm long, sepals 3—4 mm long, fruits obovoid, 1.2—2.2 by 0.7—1.6 cm. *Malay Peninsula to Solomons* . . . 30. **P. firma** (Miq.) Dubard var. **firma**
b. Pedicels slender, 9—28 mm long, sepals 2 mm long, fruits ovoid, 0.8—1.6 by 1—1.1 cm. *Celebes to Solomons* . . . . . 30. **P. firma** (Miq.) Dubard var. **microcarpa** (Burck) H. J. Lam
10.a. Corolla-lobes obtuse; fruits mostly obovoid or ovoid to globose, rarely obliquely fusiform, provided with a ring of white hairs around the base; flowers clustered along leafless or almost leafless axillary shoots; leaves 8—87 by 5—30 cm, petioles 3—7 cm. *Simalur to New Guinea* . . 64. **P. nitida** (Bl.) Dubard
b. Corolla-lobes subacute to acute; fruits mostly oblique fusiform, glabrous or sometimes with a ring of whitish hairs around the base; flowerfascicles rarely along axillary shoots with distinct or reduced leaves, mostly axillary to mature leaves along shoots; leaves 5—21 by 2.5—10 cm, petioles 1—3.5 cm. *Bali to Samoa* 53. **P. torricellensis** (Schum.) H. J. Lam

Section 2.

1.a. Mature petioles glabrous 2
b. Mature petioles pubescent 6
2.a. Secondary nerves archingly joined 3
b. Secondary nerves diminishing until inconspicuous, sometimes connected by some thickened tertiary nerves 4
3.a. Tertiary nerves generally parallel to the secondary nerves, especially near the midrib and in the middle of the leaf, rarely with a few transverse nerves. *Seychelles, Ceylon and India to Australia, Micronesia and Polynesia* 70. **P. obovata** (R. Br.) Pierre
b. Tertiary nervation irregular, sinuous, generally transverse. *Philippines* 96. **P. mindanaensis** H. J. Lam
4.a. Flowers in clusters below the leafy part of the branchlets; petioles minutely crested above. *New Guinea* . . . . . . 40. **P. hochreutineri** H. J. Lam
b. Flowers in clusters axillary to the apical leaves; petioles canaliculate above . 5
5.a. Pedicels slender, 5—12 mm long; petioles 10—34 mm long, juvenile leaves ferruginously sericeous below. *Bali to Samoa* 53. **P. torricellensis** (Schum.) H. J. Lam
b. Pedicels stout, 0—2 mm long; petioles 3—10 mm long, juvenile leaves greyish sericeous below. *New Guinea* . . . 63. **P. schlechteri** (Krause) H. J. Lam
6.a. Proportion of length of leaves and length of pedicels = 50/1 or more . . 7
b. This proportion 30/1 or less 8
7.a. Juvenile leaves greyish sericeous below, apex of leaf short obtusely acuminate; (fruits unknown). *New Guinea* . . . 63. **P. schlechteri** (Krause) H. J. Lam
b. Juvenile leaves ferruginously tomentose below, apex of leaf rounded; fruits reddish ferruginously woolly, pericarp ligneous, soft. *New Caledonia* 17. **P. vieillardii** (Baillon) Dubard
8.a. Petioles grooved above 9
b. Petioles flat above or minutely crested 10

9.a. Secondary nerves 12—20, ascending at an angle of 70°—90°, tertiary nervation always transverse, leaves mainly oblong. *New Guinea*
39. P. monticola (Krause) H. J. Lam

b. Secondary nerves 8—10, ascending at an angle of 65°—75°, tertiary nervation almost always reticulate, rarely with a few transverse nerves, leaves mainly elliptic. *New Guinea* . . . . **66. P. kaniensis** (Krause) H. J. Lam

10.a. Tertiary nervation on the whole reticulate, rarely with a few transverse. *Seychelles, Ceylon and India to Australia, Micronesia and Polynesia*
70. P. obovata (R. Br.) Pierre

b. Tertiary nervation on the whole transverse 11

11.a. Fruits ovoid, 1.3—1.5 by 0.5—0.7 cm. *Philippines*
94. P. velutina (Elmer) H. J. Lam var. **velutina**

b. Fruits globose, 1.2—1.2 cm in diam. *Philippines*
94. P. velutina (Elmer) H. J. Lam var. **sarcocarpa** (Merrill) H. J. Lam

Section 3.

1.a. Petioles glabrous. *Australia* . . . . **48. P. ralphiana** (F. v. M. ?) Dubard

b. Petioles pubescent 2

2.a. Proportion of length of leaves and length of pedicels = 30/1 or more, if between 30/1 and 25/1, then proportion of length of leaves and length of petioles = 27—44/1 3

b. This proportion = 25/1 or less, the proportion of length of leaves and length of petioles = 4—25/1 7

3.a. Secondary nerves 5—8. *New Guinea* . . . . **35. P. maculata** van Royen

b. Secondary nerves 12—28 4

4.a. Secondary nerves 24—28; pedicels 20—45 mm long; proportion length of leaves and length of pedicels = 125—150/1. *New Guinea*
59. P. densinervia (Krause) H. J. Lam

b. Secondary nerves 12—24; pedicels 3—20 mm long; proportion of length of leaves and length of pedicels = 26—80/1 5

5.a. Leaves yellowish pubescent below. *New Guinea*
60. P. ledermannii (Krause) H. J. Lam

b. Leaves brownish to reddish ferruginously pubescent below 6

6.a. Tertiary nervation strongly prominent below, grooved above, leaves oblanceolate to oblong, base cuneate, dark brown ferruginously puberulous below, petioles 3—7 × as long as the pedicels. *New Caledonia*
25. P. sebertii (Pancher) Dubard

b. Tertiary nervation slender, prominulous above, leaves obovate, base rounded, light brown tomentose below, petioles c. 1.5 × as long as the pedicels. *New Guinea*
58. P. clementis H. J. Lam

7.a. Proportion of length and width of leaves = 4—5/1, secondary nerves 12—26, ascending at an angle of 45°—90°, straight and abruptly curved at the tip. *New Caledonia* . . . . **27. P. rubicunda** (Pierre) Dubard

b. This proportion = 1.5—4/1 8

8.a. Secondary nerves 5—7, leaves 2—4.5 by 0.9—2 cm, petioles 3—5 mm long. *New Guinea* . . . . **24. P. ? lanatifolia** van Royen

b. Secondary nerves 7—32 or, if less, petioles longer than 8 mm 9

9.a. Pedicels greyish sericeous; leaves yellowish-cinnamomous. *Australia*
49. P. brownlessiana (F. v. M.) van Royen

b. Pedicels brownish to reddish ferruginously tomentose or woolly; leaves often brown to reddish ferruginously pubescent below 10

10.a. Secondary nerves 22—32, leaves 3—12.5 by 1.4—3 cm. *New Caledonia*
26. P. azou van Royen

b. Secondary nerves 6—22, or, if more, leaves 8—28 by 2.5—12 cm . . . 11

11.a. Proportion of length of leaves (in cm) and number of secondary nerves = 1/1 or more 12

b. This proportion always less than 1/1 18

12.a. Petioles canaliculate above 16

b. Petioles flat above 13

13.a. Filaments of stamens in bud curved; indumentum of flowers and leaves ferruginous or purplish red 14
b. Filaments of stamens in bud straight; indumentum of flowers and leaves brown. *Philippines* . . . . 31. **P. foxworthyi** (Elmer) H. J. Lam
14.a. Pedicels of flowers stout, 1.5—2 mm in diam. *New Guinea*
43. **P. cyclopensis** van Royen
b. Pedicels slender, always less than 1 mm in diam. 15
15.a. Pedicels 5—11 mm long, branchlets solid; leaves ferruginously to greyish-blackish tomentose below; stamens shorter than corolla. *New Guinea*
42. **P. kaernbachiana** (Engler) H. J. Lam
b. Pedicels 15—25 mm long, branchlets hollow; leaves ferruginously puberulous below; stamens longer than corolla. *New Guinea and Solomons*
44. **P. anteridifera** (White & Francis) H. J. Lam
16.a. Secondary nerves strongly prominent below, leaves rounded or short obtusely acuminate. *Australia* . . . . 51. **P. papyracea** van Royen
b. Secondary nerves not prominent or hardly so, leaves long obtusely and narrowly acuminate or acute 17
17.a. Sepals obtuse, corolla-lobes obtuse, staminodes obovate to obcuneate, apex irregularly lobed. *New Guinea* . . . 34. **P. lamprophylla** (Krause) H. J. Lam
b. Sepals acute to subacute, corolla-lobes truncate, staminodes apiculate, obtuse or acute. *Australia* . . . . 45. **P. xerocarpa** (F. v. M.) H. J. Lam
18.a. Midrib above at least in the basal part provided with 2 longitudinal ribs . 20
b. Midrib minutely crested above 19
19.a. Pedicels stout, 2—12 mm long, sepals 3—4 mm long, fruits obovoid, 1.2—2.2 by 0.7—1.6 cm. *Malay Peninsula to Solomons* . . 30. **P. firma** (Miq.) Dubard var. **firma**
b. Pedicels slender, 9—28 mm long, sepals 2 mm long, fruits ovoid, 0.8—1.6 by 1—1.1 cm. *Celebes to Solomons* . . . . . . 30. **P. firma** (Miq.) Dubard var. **microcarpa** (Burck) H. J. Lam
20.a. Tertiary nervation invisible above. *New Caledonia*
29. **P. novo-caledonica** Dubard
b. Tertiary nervation impressed above 21
21.a. Pedicels brownish woolly; secondary nerves 9—12. *New Caledonia*
23. **P. dubia** (Pancher & Sebert) van Royen
b. Pedicels ferruginously sericeous; secondary nerves 13—18. *New Caledonia*
28. **P. lucens** van Royen

Section 4.

1.a. Secondary nerves 30—40, ascending at an angle of c. 90°, tertiary nervation inconspicuous on either side, leaves 5—14 by 1—3.5 cm. *New Guinea*
54. **P. rigidifolia** (Krause) H. J. Lam
b. Secondary nerves 6—30, ascending at an angle of 40°—100°, tertiary nervation distinct on either side, leaves 6—32 by 1.8—11 cm 2
2.a. Flowers solitary, rather large, pedicels 2—5 mm long; midrib of leaf grooved above; secondary nerves 8—13, ascending at an angle of 40°—65°, leaves acute to acutely acuminate. *New Caledonia* 9. **P. laetevirens** (Baillon) Pierre
b. Flowers clustered, small, pedicels 5—18 mm long; midrib minutely crested above; secondary nerves 6—29, ascending at an angle of 60°—100°, leaves obtuse or obtusely acuminate 3
3.a. Pedicels 5—12 mm long, slender, sepals 0.5—1 by 1—1.5 mm, broadly elliptic to ovate, fruits obliquely fusiform. *Bali to Samoa*
53. **P. torricellensis** (Schum.) H. J. Lam
b. Pedicels 10—15 mm long, stout, sepals 2—5 by 2—4.5 mm, rotundate to subrotundate, fruits globose to obovoid or ovoid 4
4.a. Proportion of length and width of mature leaves = c. 3.5/1. *New Guinea*
36. **P. nebulicola** H. J. Lam
b. This proportion = 2—3/1 5
5.a. Leaves 10—20 by 4—8.5 cm, secondary nerves 14—18, ascending at an angle of 60°—75°; fruits 1—2.2 by 0.8—1.5 cm. *New Guinea*
38. **P. macropoda** H. J. Lam var. **macropoda**

b. Leaves 25—32 by 7—11 cm, secondary nerves 19—29, ascending at an angle of 80°—90°; fruits 3—4 by 1—2.5 cm. *New Guinea*
38. **P. macropoda** H. J. Lam var. **multinervis** van Royen

Section 5.

1.a. Proportion of length and width of mature leaves = 4—5/1, leaves oblong 5—14 by 1—3.5 cm, acute, secondary nerves 30—40, ascending at an angle of c. 90°. *New Guinea* . . . . 54. **P. rigidifolia** (Krause) H. J. Lam
b. This proportion = 1.5—3.5/1 or, if 1.5—4/1, secondary nerves 6—18, ascending at an angle of 35°—60°, rarely up to 100° and leaves larger than in 1.a. or not oblong 2
2.a. Pedicels 20—45 mm long, in fruit 40—60 mm; leaves obovate, 17—46 by 6—21 cm, secondary nerves 20—40; fruits 15—25 by 6—13 mm, ferruginously puberulous. *Moluccas* . . . . 41. **P. vrieseana** (Burck) Dubard
b. Pedicels at the utmost 15 mm long 3
3.a. Proportion length of petiole and length of pedicel = 10/1 or more, petioles 20—80 mm long. *New Guinea, Moluccas* 37. **P. moluccana** (Burck) H. J. Lam
b. This proportion = 0.5—10/1, if more the petioles shorter than 15 mm . . 4
4.a. Secondary nerves mostly archingly joined 5
b. Secondary nerves diminishing until inconspicuous or rarely joined by some thickened tertiary nerves, not archingly joined 7
5.a. Pericarp ligneous, or at least not papyraceous; secondary nerves of leaves ascending at an angle of 60°—90°, if less, the leaves membranous and fruits 3.5—8 cm long 6
b. Pericarp thin, fleshy; secondary nerves ascending at an angle of 35°—60°; fruits 10—15 mm long. *Seychelles, Ceylon and India to Australia, Micronesia and Polynesia* . . . . 70. **P. obovata** (R. Br.) Pierre
6.a. Fruits globose to subglobose, 3.5—8 by 3.5—8 cm, 5-seeded, pedicels of flowers 2—3 mm long; secondary nerves of leaves 6—9, petioles flat above. *New Guinea*
71. **P. ripicola** van Royen
b. Fruits obliquely fusiform, 1.5—2.5 by 0.6—1.3 cm, 1- rarely up to 3-seeded, pedicels of flowers 5—12 mm long; secondary nerves (6—)10—21, petioles grooved above. *Bali to Samoa* . . . 53. **P. torricellensis** (Schum.) H. J. Lam
7.a. Leaves very thin and flexible, tertiary nervation mainly reticulate with a few slender transverse nerves. *Burma, Pakistan and Andamans*
65. **P. longipetiolata** (King & Prain) H. J. Lam
b. Leaves coriaceous to papyraceous, tertiary nervation mainly transverse with a reticulate nervation in between 8
8.a. Proportion of length of petiole and length of pedicel = c. 8/1, petioles 25—40 mm long. *New Caledonia* . . . 57. **P. sphaerocarpa** (Baill.) Dubard
b. This proportion = 1—3/1 or, if more, petioles 3—20 mm long 9
9.a. Leaves always glabrous. *South America* . . . 82. **P. guianensis** van Royen
b. Juvenile leaves pubescent 10
10.a. Juvenile leaves ferruginously sericeous or tomentose below, petioles 10—34 mm long; pedicels 5—15 mm long 11
b. Juvenile leaves greyish sericeous below, petioles 3—10 mm long; pedicels 0—2 mm long. *New Guinea* . . . . 63. **P. schlechteri** (Krause) H. J. Lam
11.a. Pedicels of fruits 2—5 mm long, fruits 2.5—3 by 2—3 cm, 5-seeded. *Malay Peninsula, Sumatra, Borneo* . . . . . 95. **P. maingayi** (Clarke) van Royen
b. Pedicels of fruits 5—15 mm long, fruits 1.5—2.5 by 0.6—1.3 cm, 1—3-seeded (in *P. nebulicola* the sizes of the mature fruits are unknown but the young fruits are one-seeded) 12
12.a. Fruits globose, one-seeded, proportion of length and width of mature leaves = 3—3.5/1. *New Guinea* . . . . 36. **P. nebulicola** H. J. Lam
b. Fruits obliquely fusiform, 1—3-seeded, the said proportion = c. 2. *Bali to Samoa*
53. **P. torricellensis** (Schum.) H. J. Lam

Section 6.

1.a. Secondary nerves 22—32, leaves obovate-oblong. *New Caledonia*
26. **P. azou** van Royen

b. Secondary nerves 6—20 or, if more, the leaves eliptic-oblong 2
2.a. Proportion of length of mature leaves and length of petioles = 12—35/1 . 3
b. This proportion = 10/1 or less, if up to 14/1 fruit up to 2.5 by 1.6 cm . 4
3.a. Tertiary nervation almost parallel to the secondary nerves; pedicels greyish-ferruginously sericeous. *New Guinea* . . . 68. **P. suboppositifolia** H. J. Lam
b. Tertiary nervation almost perpendicular to the secondary nerves; pedicels brownish ferruginously woolly. *New Caledonia* 23. **P. dubia** (Pancher & Sebert) van Royen
4.a. Midrib with 2 longitudinal crests above 5
b. Midrib with 1 crest above or grooved 6
5.a. Leaves 2—10 by 1—2.5 cm, petioles 3—10 mm long, pubescent; fruits 12—15 by 5—7 mm. *New Caledonia* . . . . 28. **P. lucens** van Royen
b. Leaves 10—19 by 3—6.5 cm, petioles 18—45 mm long, glabrous; fruits 28—35 by 10—12 mm. *New Guinea* . . . . . . 33. **P. sussu** (Engler) H. J. Lam
6.a. Basal angle of leaf 90°—100°, leaves 20—25 by 7—8 cm; pedicels 15—22 mm long. *Philippines* . . . . 31. **P. foxworthyi** (Elmer) H. J. Lam
b. Basal angle 20°—90°, leaves 2—21 by 1—7.5 cm; pedicels 3—28 mm long . 7
7.a. Leaves spatulate, 4—7 by 1.4—3.5 cm, reddish brown when dry, proportion of length of leaves and petioles = c. 8/1, tertiary nervation inconspicuous or absent above, petioles as long as pedicels. *New Guinea* 52. **P. krausei** H. J. Lam
b. Leaves elliptic to obovate, 4—21 by 1.5—7.5 cm, olivaceous to brown when dry, proportion of length of leaves and petioles = 2—7/1, tertiary nervation distinct above, but if inconspicuous or absent leaves pale cinnamomous below, petioles longer than pedicels 8
8.a. Leaves pale cinnamomous below when dry; sepals whitish sericeous without, whitish or pale ferruginous sericeous within. *Australia* 47. **P. queenslandica** van Royen
b. Leaves brown or light brown below when dry; sepals pale ferruginous or withish puberulous without, ferruginously sericeous or pubescent within 9
9.a. Sepals whitish puberulous without, ferruginously sericeous within; leaves olivaceous brown above. *Australia* . . . . . 46. **P. laurifolia** (Richard) Pierre
b. Sepals pale ferruginously puberulous on either side; leaves dark cinnamomous brown or darkbrown above 10
10.a. Pedicels stout, mostly woolly pubescent, 2—12 mm long; sepals 3—4 mm long; fruits obovoid, 1.2—2.2 by 0.7—1.6 cm. *Malay Peninsula to Solomons* 30. **P. firma** (Miq.) Dubard var. **firma**
b. Pedicels slender, appressedly tomentose, 9—28 mm long; sepals 2 mm long; fruits ovoid, 0.8—1.6 by 1—1.1 cm. *Celebes to Solomons* 30. **P. firma** (Miq.) Dubard var. **microcarpa (Burck)** H. J. Lam

GROUP C.

1.a. Flowers clustered or solitary, borne along a leafless or almost leafless axillary branchlet . . . . Section 1 (p. 262)
b. Flowers clustered or solitary, axillary to ordinary leaves 2
2.a. Mature leaves pubescent on one or either side, sometimes on the nerves or on a small part of the leaf only 3
b. Mature leaves completely glabrous 4
3.a. Mature pedicels glabrous . . . . Section 2 (p. 262)
b. Mature pedicels pubescent . . . . Section 3 (p. 262)
4.a. Mature pedicels glabrous 5
b. Mature pedicels pubescent 7
5.a. Sepals glabrous without 6
b. Sepals pubescent without . . . . Section 5 (p. 264)
6.a. Sepals glabrous within . . . . Section 4 (p. 264)
b. Sepals pubescent within . . . . Section 9 (p. 267)
7.a. Sepals glabrous without . . . . Section 6 (p. 264)
b. Sepals pubescent without 8
8.a. Sepals glabrous within . . . . Section 7 (p. 264)
b. Sepals pubescent within . . . . Section 8 (p. 267)

Section 1.

1.a. Sepals glabrous without. *Simalur to New Guinea* . 64. **P. nitida** (Bl.) Dubard
b. Sepals pubescent without, but sometimes the outer ones glabrous . . . 2
2.a. Sepals pubescent within, petioles 0.2—1.5 cm long. *Australia* 21. **P. australis** (R. Br.) Pierre
b. Sepals glabrous within, petioles 1.4—3.5 cm long 3
3.a. Secondary nerves 8—10, petioles 14—22 mm long, leaves 4—13 by 3.5—5.5 cm; pedicels 5—10 mm. *New Guinea* . . . 66. **P. kaniensis** (Krause) H. J. Lam
b. Secondary nerves 14—17, petioles 25—35 mm long, leaves 21—26 by 7.5—9 cm, pedicels 1—2 mm long. *New Guinea* . . . 67. **P. sarcospermoides** H. J. Lam

Section 2.

1.a. Fruits globose or obliquely obovoid, 2.5—3 cm in diam. or c. 3.5 by 1.5 cm, apex rounded; petioles grooved, marginal nerve of leaf narrow, secondary nerves ascending at an angle of 50°—60°. *New Caledonia and surrounding islets* 72. **P. lifuana** (Baill.) Pierre
b. Fruits obliquely obovoid or fusiform, 2.5—3.5 by 1—1.5 by 0.5—1 cm, crowned by the 2—7 mm long persistent style; petioles with 2 longitudinal ribs, marginal nerve of leaf stout, secondary nerves ascending at an angle of 35°—55°. *New Caledonia* 13. **P. dictyoneura** (Baill.) Pierre

Section 3.

1.a. Basal angle of leaves 100° or more, leaves 5—7 cm wide, apex retuse, midrib grooved, secondary nerves 8—11, ascending at an angle of 50°—85°. *New Caledonia* 16. **P. skottsbergii** Guill.
b. Basal angle at the utmost 90° 2
2.a. Secondary nerves 3—6, ascending at an angle of 10°—25°, proportion of length and width of leaves = 7—25/1 3
b. Secondary nerves 4—30, ascending at an angle of 30°—85°, proportion of length and width of leaves = 1—5/1 or, if up to 20/1, secondary nerves 12—22 or angle between secondary nerves and midrib 45°—55° 4
3.a. Secondary nerves 4—6, leaves 0.8—1.1 cm wide, mucronate; pedicels c. 13 mm long; proportion of length and width of leaves = 7—9/1. *New Caledonia* 3. **P. rheophytopsis** van Royen
b. Secondary nerves 3 or 4, leaves 0.1—0.4 cm wide, obtuse; pedicels 5—11 mm long, proportion of length and width of leaves = 20—25/1. *New Caledonia* 2. **P. pinifolia** (Baill.) Dubard
4.a. Base of the style in fruit thickened 5
b. Style not thickened 8
5.a. Leaves 2—4 by 0.2—1.1 cm, acutely acuminate, secondary nerves 4—6. *Crocodile Island* . . . . 92. **P. crocodiliensis** van Royen
b. Leaves 7—20 by 1.5—8.3 cm, rounded or broadly obtuse acuminate, secondary nerves 4—12 6
6.a. Corolla-lobes rounded; fruits red or almost black, obovoid. *Riouw to Solomons and Australia* . . . . 80. **P. obovoidea** H. J. Lam
b. Corolla-lobes truncate; fruits green, ovoid, globose or ellipsoid 7
7.a. Leaves narrowly oblong-obovate or obovate-lanceolate or obovate, rather gradually attenuate into petiole, which is 0.5—2.5 cm long. *Australia* 81. **P. pohlmaniana** (F. v. M.) Pierre var. **vestita** (White) van Royen
b. Leaves obovate or subrotundate, rather abruptly attenuate in a 2—5 cm long petiole. *Australia* . . . . 83. **P. arnhemica** (F. v. M.) van Royen
8.a. Proportion of length and width of leaves = 13—20/1. *New Caledonia* 4. **P. baillonii** (Zahlbr.) Dubard
b. This proportion = 1—5/1 9
9.a. Mature petioles glabrous 10
b. Mature petioles pubescent 16

10.a. Petioles, pedicels and juvenile leaves densely reddish or ferruginously woolly. *New Guinea* . . . . 78. **P. linggensis** (Burck) Pierre var. **vinicolorata** van Royen

b. Petioles, pedicels and juvenile leaves brownish, blackish or ferruginously tomentose but mainly whitish or yellowish sericeous 11

11.a. Tertiary nervation reticulate, distinctly parallel to the secondary nerves or consisting of nerves parallel to the secondary nerves 12

b. Tertiary nervation reticulate, not parallel to the secondary nerves . . . 15

12.a. Fruits turbinate with flat and umbonate apex. *Fiji* 74. **P. costata** (Endl.) Pierre var. **umbonata** van Royen

b. Fruits ovoid, globose to 5-sided, sometimes obliquely fusiform-ovoid, apex rounded 13

13.a. Fruits with woody pericarp, densely reddish tomentose. *Fiji* 74. **P. costata** (Endl.) Pierre var. **smithii** van Royen

b. Fruits with fleshy or crustaceous pericarp, glabrous 14

14.a. Leaves 5—25 cm long, coriaceous, obovate, apex rounded or more rarely subacute, base attenuate and decurrent, secondary nerves 11—26, close together, hardly distinguishable from the almost equally strong and parallel nerves. *New Zealand, Norfolk Island, Fiji* . . . . . 74. **P. costata** (Endl.) Pierre var. **costata**

b. Leaves 7—15 cm long, chartaceous to subcoriaceous, elliptic or oblong to sublanceolate, the smaller ones obovate, base more or less abruptly decurrent, apex rounded, sometimes bluntly acute, secondary nerves rather wide apart, 8—10 (—17), the tertiary ones little but distinctly more slender, united into a longitudinally stretched reticulation, parallel to the secondary nerves. *New Zealand to New Hebrides* and *Tubuai Islands* . . 74. **P. costata** (Endl.) Pierre var. **vitiensis** (Gray) H. J. Lam

15.a. Marginal nerves of leaves slender to inconspicuous, secondary nerves ascending at an angle of (35°—)50°—60°; sepals obtuse, inner ones fimbriate, corolla-lobes entire, rounded. *Seychelles, Ceylon and India to Australia, Micronesia and Polynesia* 70. **P. obovata** (R. Br.) Pierre

b. Marginal nerves distinct, secondary nerves ascending at an angle of 50°—60°; sepals apiculate, inner ones not fimbriate, corolla-lobes ciliate, truncate. *New Caledonia* . . . . 75. **P. microphylla** Pierre

16.a. Leaves 0.4—5 by 0.3—3.8 cm, secondary nerves 3—6, proportion of length and width of leaves = 1—1.5/1. *Australia* 19. **P. cotinifolia** (A. DC) Dubard var. **pubescens** van Royen

b. Leaves mostly larger, secondary nerves 4—20, proportion of length and width of leaves = 2—5/1 17

17.a. Petioles, pedicels and juvenile leaves reddish woolly. *New Guinea* 78. **P. linggensis** (Burck) Pierre var. **vinicolorata** van Royen

b. Petioles, pedicels and juvenile leaves brownish, yellowish or whitish sericeous 18

18.a. Basal angle of leaves c. 35° 19

b. Basal angle 60°—90° 22

19.a. Pedicels 10—20 mm long. *New Caledonia* 14. **P. brousmichei** (Baill.) Dubard

b. Pedicels 2—5 mm long 20

20.a. Petioles 15—25 mm long; sepals c. 4 by 3.5 mm. *Australia* 18. **P. euphlebia** (F. v. M.) Francis

b. Petioles 2—10 mm 21

21.a. Leaves obtusely acuminate; flowers solitary or 2 in each axil, sepals ovate to orbicular, 2.5—3 by 2.5—3 mm. *New Caledonia* . . 75. **P. microphylla** Pierre

b. Leaves obtuse, entire or emarginate; flowers in few-flowered clusters, sepals ovate, 5—6.5 by 4.5—5.5 mm. *New Caledonia* . . . 7. **P. contermina** Pierre

22.a. Inner sepals ciliate along the margin 25

b. Inner sepals not ciliate along the margin 23

23.a. Pedicels 5—10 mm long; leaves pale brown sericeous below, basal angle of leaf c. 80°, tertiary nerves slender, prominulous above, petioles 14—22 mm long. *New Guinea* . . . . 66. **P. kaniensis** (Krause) H. J. Lam

b. Pedicels 1—3 mm long; leaves dark cinnamomous or dark wine-coloured tomentose or woolly below, tertiary nerves stout, prominulous either above or below, petioles 2—10(—20) mm 24

24.a. Juvenile leaves dark wine-coloured tomentose below; margin of the corolla-lobes ciliate. *New Caledonia* . . . . **13. P. dictyoneura** (Baill.) Pierre

b. Juvenila leaves cinnamomous tomentose below; margin of corolla-lobes not ciliate. *New Caledonia* . . . . **12. P. lauracea** (Baill.) Dubard

25.a. Pedicels stout, reddish ferruginously sericeous. *New Caledonia* **15. P. serpentina** (Moore)

b. Pedicels slender, whitish to yellowish sericeous. *Seychelles, Ceylon and India to Australia, Micronesia and Polynesia* . . . . **70. P. obovata** (R. Br.) Pierre

Section 4.

1.a. Leaves 2.5—5 cm wide, petioles 10—15 mm long; pedicels 2—5 mm long, sepals 6—7 by 5—6 mm. *New Caledonia* . . . . **9. P. laetevirens** (Baill.) Pierre

b. Leaves 0.8—2.3 cm wide, petioles 2—10 mm long; pedicels 5—10 mm long, sepals 2.5—3.5 by 2.5—3.5 mm. *Hainan, Indochina* **73. P. clemensii** (Lec.) van Royen

Section 5.

1.a. Leaves 16.5—24 by 6.4—7.5 cm, thin, secondary nerves 11—16; fruits ovoid, c. 2 by 1.5 cm. *Fiji* . . . . **86. P. membranacea** H. J. Lam

b. Leaves 4—14 by 1.3—6 cm, coriaceous to chartaceous 2

2.a. Secondary nerves 5—7, ascending at an angle of 60°—70°; pedicels c. 10 mm long, fruits ellipsoid. *Ambon, Timor* . . . . . **84. P. lamii** van Royen

b. Secondary nerves 7—16, ascending at an angle of 35°—60°. *New Caledonia c.a.* **72. P. lifuana** (Baill.) Pierre

Section 6.

1.a. Fruits ferruginously tomentose or provided with a ring of white hairs at the base 2

b. Fruits glabrous; secondary nerves of leaf straight, ascending at an angle of 60°—80°, petioles 1—1.2 cm. *Fiji* . . . **77. P. pyrulifera** (Gray) H. J. Lam

2.a. Fruits provided with a ring of white hairs at the base; secondary nerves of leaf straight, ascending at an angle of 45°—60°, petioles 0.2—1 cm long. *Fiji* **76. P. vitiensis** Gillespie

b. Fruits ferruginously tomentose; secondary nerves straight, ascending at an angle of 70°—110°, petioles 1.2—1.5 cm long. *New Guinea* **55. P. dies-reginae** van Royen

Section 7.

1.a. Proportion of length and width of leaves = 20—25/1, leaves 1.5—8 by 0.1—0.4 cm, secondary nerves 3—4, ascending at an angle of 10°—25°. *New Caledonia* **2. P. pinifolia** (Baill.) Dubard

b. This proportion = 1—9/1, secondary nerves 3—50 2

2.a. Mature petioles glabrous 3

b. Mature petioles pubescent 20

3.a. Proportion of length and width of leaves = 8—9/1, leaves acute. *New Caledonia* **5. P. saligna** Moore

b. This proportion = 1.5—5/1, leaves mainly obtuse to obtusely acuminate . . 4

4.a. Corolla distinctly exsert 5

b. Corolla not or very slightly exsert 9

5.a. Secondary nerves of leaf 13—21, tertiary nervation generally transverse, sinuous, though with more or less reticulate veinlets which form angular areoles with prominulous sides, petioles 1.5—4 cm long; pedicels 0.5—1.2 cm long. *Mindanao* **96. P. mindanaensis** H. J. Lam

b. Secondary nerves 6—13 or, if more, petioles 3—8 mm long or pedicels 1.5—5 mm long; tertiary nervation reticulate 6

6.a. Basal angle of leaf 100° or more. *New Caledonia* **16. P. skottsbergii** Guill.

b. This angle 55°—80° 7

7.a. Margins of inner sepals fimbriate. *Australia, Lord Howe island*
20. P. myrsinoides (Cunn.) Blake

b. Margins of inner sepals entire 8

8.a. Tertiary nervation always with some transverse nerves. *South America*
82. P. guianensis van Royen

b. Tertiary nervation reticulate, no transverse nerves ever present. *New Caledonia*
11. P. reticulata (Baill.) Pierre

9.a. Tertiary nervation outside the arches, brought about by the secondary nerves, forming an irregularly undulate intramarginal nerve 10

b. No such intramarginal nerve present 14

10.a. Secondary nerves ascending at an angle of 50°—60°; pericarp thick, fruits 2—3.5 by 1.5—2.5 cm 11

b. Secondary nerves ascending at an angle of 60°—90°; pericarp thin, membranous, fruits 1.2—1.5 by 1—1.1 by 0.6—0.8 cm. *Carolines*
88. P. micronesica (Kan.) Kan.

11.a. Fruits turbinate with flat and umbonate apex. *Fiji*
74. P. costata (Endl.) Pierre
var. **umbonata** van Royen

b. Fruits ovoid, globose to 5-sided, sometimes obliquely fusiform-ovoid, apex rounded 12

12.a. Fruits with woody pericarp, densely reddish tomentose. *Fiji*
74. P. costata (Endl.) Pierre
var. **smithii** van Royen

b. Fruits with fleshy or crustaceous pericarp, glabrous 13

13.a. Leaves 5—25 cm long, coriaceous, obovate, apex rounded or more rarely subacute, base attenuate and decurrent, secondary nerves 11—26, close together, hardly distinguishable from the almost equally strong and parallel nerves. *New Zealand, Norfolk Island, Fiji* . . . . . **74. P. costata** (Endl.) Pierre
var. **costata**

b. Leaves 7—15 cm long, chartaceous or subcoriaceous, elliptic, oblong or sublanceolate, the smaller ones obovate, base more or less abruptly decurrent, apex rounded, sometimes bluntly acute, secondary nerves rather wide apart, 8—10 (—17), the tertiary ones distinctly more slender, united into a longitudinally stretched reticulation, parallel to the secondary nerves. *New Zealand to New Hebrides and Tubuai Islands* . . . . . . **74. P. costata** (Endl.) Pierre
var. **vitiensis** (Gray) H. J. Lam

14.a. Corolla-lobes truncate 15

b. Corolla-lobes subacute to obtuse or rounded 17

15.a. Petioles, pedicels and lower surface of leaves reddish woolly. *New Guinea*
78. P. linggensis (Burck) Pierre
var. **vinicolorata** van Royen

b. This pubescence whitish, yellowish or ferruginously sericeous to pubescent . 16

16.a. Secondary nerves of leaf 10—35; fruits 0.8—2.5 by 0.5—1.9 cm, 1—4-seeded. *Malay Peninsula to Samoa* . . . . **78. P. linggensis** (Burck) Pierre
var. **linggensis**

b. Secondary nerves of leaf 7—13; fruits 2—2.7 by 1.5—2 cm, 5-seeded. *Samoa, Fiji, Tonga* (See also 77. P. pyrulifera (Gray) H. J. Lam)
78. P. linggensis (Burck) Pierre
var. **garberi** (Christ.) van Royen

17.a. Inner sepals ciliate along the margin 18

b. Inner sepals without ciliate margin 19

18.a. Secondary nerves ascending at an angle of 60°—70°; sepals 1—1.5 by 1—1.5 mm, styles c. 0.5 mm long, fruits ovoid, 0.5—0.8 by 0.4—0.6 cm, provided with a ring of white hairs at the base. *New Hebrides*
79. P. aneityensis (Guill.) H. J. Lam

b. Secondary nerves ascending at an angle of 35°—60°; sepals 2—3 by 2—3 mm, styles 1.5—2 mm long, fruits obovoid or globose, 1—1.5 by 1—1.5 cm, completely glabrous. *Seychelles, Ceylon and India to Australia, Micronesia and Polynesia*
70. P. obovata (R. Br.) Pierre

19.a. Secondary nerves 13—18, ascending at an angle of 40°—50°, leaves obtusely acuminate. *New Guinea* . . . . 90. **P. chrysophylloides** H. J. Lam
b. Secondary nerves 8—12, ascending at an angle of 50°—85°, leaves rounded or retuse. *New Caledonia* . . . . 16. **P. skottsbergii** Guill.
20.a. Secondary nerves of leaf 3—5, ascending at an angle of 15°—25°; flowers large, sepals c. 9 by 6 mm. *New Caledonia* . . . . 1. **P. ? leptostylidifolia** Guill.
b. Secondary nerves 4—50, ascending at an angle of 25°—90°; flowers small, solitary or in clusters, sepals always smaller than 6 by 5 mm 21
21.a. Proportion of length and width of leaves = 6.5—10/1 22
b. This proportion = 1—5/1 23
22.a. Leaves linear-lanceolate, acute, gradually narrowing towards the acute base, secondary nerves 9—12. *New Caledonia* . . . . . . 5. **P. saligna** Moore
b. Leaves spatulate-oblong or linear, mucronate, abruptly narrowed at the rounded base. *New Caledonia* . . . . 6. **P. pronyensis** Guill.
23.a. Styles in fruit with a thickened base 24
b. No such thickened base of the style 26
24.a. Leaves narrowly oblong-obovate, obovate-lanceolate or obovate, rather gradually attenuate into petiole, which is 0.5—2.5 cm long 25
b. Leaves obovate or subrotundate, rather abruptly attenuate in a 2—5 cm long petiole. *Australia* . . . . 83. **P. arnhemica** (F. v. M.) van Royen
25.a. Fruits circular in transverse section. *Australia* . . . 81. **P. pohlmaniana** var. **pohlmaniana**
b. Fruits star-shaped in transverse section. *Australia* 81. **P. pohlmaniana** (F. v. M.) Pierre var. **asterocarpon** van Royen
26.a. Secondary nerves of leaf 4—6, ascending at an angle of 25°—35°. *New Caledonia* 10. **P. cinerea** (Pancher) van Royen
b. Secondary nerves 3—50, ascending at an angle of 35°—90° or, if smaller than 35°, secondary nerves 6—18 27
27.a. Proportion of length and width of leaves = 1—1.5/1, leaves 0.4—5 by 0.3—3.8 cm, secondary nerves 3—6, ascending at an angle of 40°—55°, petioles 0.5—2 mm long. *Australia* . . . . 19. **P. cotinifolia** (A. DC) Dubard var. **cotinifolia**
b. This proportion = 1.5—5/1, leaves 1.2—31.5 by 0.6—14 cm, secondary nerves 6—50, ascending at an angle of 35°—90°, petioles 2—60 mm long . . . 28
28.a. Fruits long tapering into the persistent style 29
b. Fruits rounded or obtuse at apex 30
29.a. Secondary nerves ascending at an angle of 35°—50°; pedicels 2—4 mm long; leaves gradually tapering into petiole. *New Hebrides* 8. **P. guillauminii** H. J. Lam
b. Secondary nerves ascending at an angle of 55°—75°; pedicels 4—14 mm long; leaves abruptly narrowing into petiole. *Australia, Lord Howe* 20. **P. myrsinoides** (Cunn.) Blake
30.a. Fruits with thin membranous pericarp 31
b. Fruits with flesh or ligneous pericarp, 0.5—3.5 by 0.4—2.5 cm or, if pericarp thin, fruits 1.5—3.5 by 1—2.5 cm and brownish or reddish ferruginously sericeous 32
31.a. Proportion of petioles and pedicels = 2.5—5/1. *Seychelles, Ceylon and India to Australia, Micronesia and Polynesia* . . . . 70. **P. obovata** (R. Br.) Pierre
b. This proportion = 1—1.5/1. *New Guinea* . 90. **P. chrysophylloides** H. J. Lam
32.a. Leaves gradually tapering into and long decurrent along the petioles . . 33
b. Leaves abruptly narrowing into the petioles 34
33.a. Angle between secondary nerves and midrib 60°—70°, proportion length and width of leaves = 3.5—5/1. *Australia* . . 18. **P. euphlebia** (F. v. M.) Francis
b. This angle 45°—50°, the said proportion 2—3/1. *New Hebrides* 79. **P. aneityensis** (Guill.) H. J. Lam
34.a. Tertiary nervation reticulate. *New Guinea* 90. **P. chrysophylloides** H. J. Lam
b. Tertiary nervation with one to three stronger nerves parallel to the secondary nerves 35
35.a. Pedicels 1—3 cm, elongate and up to 3.5 cm long in fruit; leaves mostly longer than 6 cm and with rounded tip, rarely smaller or with acute tip; sepals rounded but not rarely more or less acute, fruits mostly large, with rounded tip . . 36

b. Pedicels 0—0.8 cm, not or hardly elongate in fruit; leaves 3—12 cm, tip rounded or often subacute; sepals mostly acute, fruits often small and sometimes beaked at the apex 37
36.a. Flowers 1—3(—4) in a leaf-axil. *Hawaii* **91. P. sandwicensis** (Gray) Pierre var. **sandwicensis** forma **sandwicensis**
b. Flowers (1—)4—7 in a leaf-axil. *Hawaii* . . . . . . **91. P. sandwicensis** var. **sandwicensis** forma **puulupensis** (Baehni & Degener) H. J. Lam
37.a. Flowers 1—3 (—4) in a leaf-axil. *Hawaii* . . . . **91. P. sandwicensis** var. **spathulata** (Hill.) H. J. Lam forma **spathulata**
b. Flowers (1—)4—7(—12) in a leaf axil. *Hawaii* . . . **91. P. sandwicensis** var. **spathulata** forma **densiflora** (Hill.) H. J. Lam

Section 8.

1.a. Secondary nerves of leaf 25—40, tertiary nerves forming distinct areoles at upper surface of leaf. *New Caledonia* . . **98. P. ? balansana** (Pierre) Pierre
b. Secondary nerves 7—20, tertiary nerves never forming areoles 2
2.a. Petioles longer than 15 mm 3
b. Petioles shorter than 12 mm 4
3.a. Pedicels and sepals ferruginously pubescent on either side, corolla-lobes rotundate, anthers acute; secondary nerves of leaf ascending at an angle of 50°—60°. *New Guinea* . . . . **85. P. tenuipes** (Krause) H. J. Lam
b. Pedicels and sepals yellowish pubescent on either side, corolla-lobes ovate, anthers emarginate; secondary nerves ascending at an angle of 60°—65°. *New Ireland, New Britain* . . . . **87. P. peekelii** (Krause) H. J. Lam
4.a. Leaves membranous, 18—24 by 8.5—10.5 cm, secondary nerves 13—20. *New Guinea* **89. P. solida** van Royen
b. Leaves chartaceous to coriaceous, 4—20 by 1.5—6 cm, secondary nerves 7—15 5
5.a. Fruits 6.2—7.5 by 3—4 cm. *New Guinea* **68. P. suboppositifolia** H. J. Lam
b. Fruits 1—5.2 by 0.5—2 cm 6
6.a. Leaves brown above when dry; corolla distinctly exsert, fruits ferruginously sericeous but soon completely glabrous. *Australia* **21. P. australis** (R. Br.) Pierre
b. Leaves green, olivaceous or black above when dry, often bluish; corolla not or very slightly exsert, fruits with a ring of white hairs at the base of the style and of ferruginous hairs at the base of the fruit. *Australia to Key, Morotai and New Guinea* . . . . **93. P. chartacea** (F. v. M.) H. J. Lam

Section 9.

1.a. Secondary nerves of leaf 6—10(—18), ascending at an angle of 55°—75°; fruits obliquely fusiform to ovoid, 1.5—3 by 0.6—2.5 cm. *Australia, Lord Howe Island* **20. P. myrsinoides** (Cunn.) Blake
b. Secondary nerves 5—8, angle 35°—45°; fruits obovoid, 3—4 by 2—4 by 2—4 cm. *Australia* . . . . **22. P. eerwah** (Bailey) van Royen

Specific descriptions

Group 1.

1. P. ? leptostylidifolia Guillaumin, Bull. Soc. bot. Fr. 91, 1944, 70.

Shrubs. Branchlets terete, 2—2.5 mm in diam., greyish or ferruginously puberulous, glabrescent. *Leaves* conferted at apex of branchlets, elliptic-oblong, 2—3 by 0.7—0.9 cm, apex obtuse, base cuneate; marginal nerve indistinct, greyish or ferruginously puberulous but glabrescent, except at upper surface of leaf at base, nitidous above, nitidulous below, coriaceous; midrib prominulous above, less so towards apex, grooved below, secondary nerves 3—5, ascending at an angle of 15°—25°, curved, indistinctly archingly joined and forming an inconspicuous, almost straight intramarginal nerve, prominulous and inconspicuous on either side, tertiary nerves few, reticulate, inconspicuous; petioles flat above and crested, 2—3 mm long, greyish puberulous. *Flowers* solitary; pedicels angular, 10—15 mm long, ferruginously puberulous. *Sepals* ovate, outer ones acute and up to 9 by 6 mm, inner ones obtuse and up to 14 by 8 mm, ferruginously sericeous without, fimbriate along margin, glabrous within. *Corolla* and its appendages unknown. *Ovary* ovoid, tapering into style, up to 12 by 6 mm large, ferruginously woolly tomentose; style filiform, angular, up to 3.5 cm long. *Juvenile* fruits ovoid, acuminate, up to 15 by 10 mm large, 2-seeded, seeds incompletely known.

Type specimen: *Deplanche 2913* in P.

Distr.: New Caledonia.

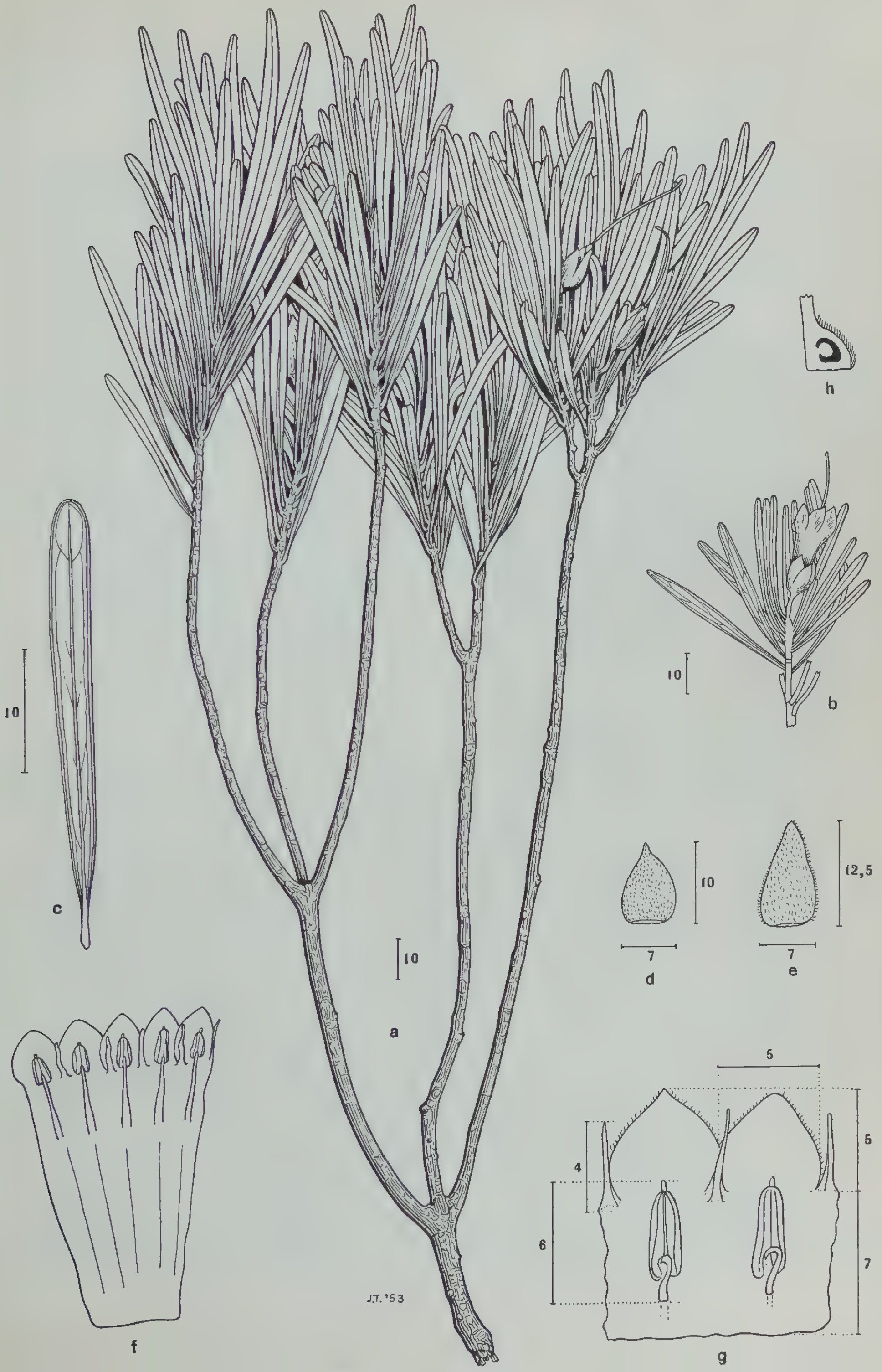
New Caledonia. Néhoué, Cape Tonnesse: *Deplanche 2913* (P) *&* *440* (K, P), fl., juv. fr.; without loc.: *Vieillard 254* (P).

Remarks: In *Vieillard 254* one flower is found with a 4-merous calyx, 5-merous corolla, 6 filaments and a 5-celled ovary. No staminodes or anthers are present. As it is uncertain whether this flower belongs to this species no description of the corolla is given above.

2. P. pinifolia (Baillon) Dubard, 1912, 57; Däniker, Vierteljahrsschr. Nat. Ges. Zürich 78, 1933, 355 — *Peuceluma pinifolia* Baillon, Bull. Soc. linn. Paris 2, 112, 1890, 895 — *Pouteria pinifolia* (Baillon) Baehni, 1942, 376 — *Fig. 7.*

Shrubs, 1—2 m large. Branchlets terete, 2—3 mm in diam., whitish greyish, repeatedly (2—)3(—5) branchlets together, whitish puberulous, glabrescent. *Leaves* conferted at apex of branchlets, linear, (1.5—)2—8 by 0.1—0.4 cm, apex obtuse, base gradually tapering into petiole; marginal nerve distinct, yellowish, glabrous on either side, sometimes greyish sericeous in basal part near petiole, nitidous above, nitidulous below, coriaceous; midrib prominulous above, prominent below, secondary nerves 3 or 4, ascending at an angle of 10°—25°, archingly joined and forming a nearly straight intramarginal nerve, prominulous on either side, tertiary nervation loosely reticulate, inconspicuous; petioles 2—3 mm long, subterete, greyish sericeous. *Flowers* large; pedicels terete, 5—11 mm long, yellowish sericeous. *Sepals* 5, outer two smaller than the inner ones, outer ones ovate, 9.5—10.5 by 6.5—7.5 mm, apex acute, yellowish sericeous without, glabrous within, inner sepals ovate, 10—12 by 7—8 mm, apex subacute to obtuse, yellowish sericeous without, fimbriate along margin, glabrous within. *Corolla* 20—30 mm long, lobes orbicular-ovate, 5—8 by 5—6 mm, acute, acuminate or obtuse at apex, fimbriate along margin. *Stamens* 7—8 mm long, inserted in the apical fourth, filaments subulate, in bud curved inward at tip, anthers oblong, 3.5—4.5 mm long, apex mucronate, dehiscing laterally. *Staminodes* linear or subulate, 3—4 mm long, apex acute. *Ovary* ovoid, c. 1 by 2.5—3.5 mm, 5-lobed and -celled, ferruginously strigose; style filiform, 3—4.5 cm long, exsert. *Fruits* unknown.

Fig. 7. *P. pinifolia,* a. habit, b. top of branchlet with flower, c. leaf from below, d. outer sepal, outside, e. inner sepal, outside, f. inner view of corolla, g. inside of young corolla, h. longitudinal section of gynaecium. (*Balansa 3151*).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Type specimen: *Balansa 3151* in P.

Distr.: New Caledonia.

NEW CALEDONIA. Mt Poume, on volcanic soils: *Balansa 3151* (L, P), fl.; Yaté valley, serpentine scrub: *Däniker 3092* (Z), small shrub, fl. Oct.

3. P. rheophytopsis van Royen, nov. sp. — *Pag. 428 and fig 8.*

Trees ? Branchlets terete, 1.5—3.5 mm in diam., whitish or yellowish sericeous. *Leaves* conferted at apex of branchlets, 6—10 by 0.8—1.1 cm, apex obtuse, entire or emarginate, mucronulate, base narrowly cuneate and decurrent; margins involute, with a distinct nerve, glabrous above, whitish to yellowish sericeous below, nitidous and greenish above, dull and yellowish below, coriaceous; midrib prominulous above, diminishing towards apex, prominent below, secondary nerves 4—6, ascending at an angle of c. 15°, straight to slightly curved, prominulous to inconspicuous above, prominulous below, archingly joined, tertiary nervation laxly reticulate, sparse; petioles 2—5 mm long, flat above, whitish sericeous or glabrous below. *Flowers* large, pedicels angular, c. 13 mm long, whitish sericeous. *Sepals* ovate, 11—12 by 6—8 mm, apex indistinctly obtusely acuminate, whitish sericeous without, glabrous within, inner sepals with membranous margin, which is ferruginously fimbriate. *Corolla* seen in bud only, c. 8 mm long, lobes broadly ovate, 4—5 by 4—5 mm, apex obtuse or subacute, margin ferruginously fimbriate. *Stamens* inserted in the basal fourth, 3—4 mm long, filaments subulate, 2—2.5 mm long, anthers sagittate, 2—2.5 mm long, apex obtuse, mucronulate, dehiscing laterally. *Staminodes* lanceolate, linear or petaloid, 3—4 by 1—2 mm, acute. *Ovary* obovoid, 1—2 by 2—2.5 mm, ferruginously pilose, style subulate, 7—8 mm ong. *Fruits* unknown.

Type specimen: *Balansa 3469* in L.

Distr.: New Caledonia.

NEW CALEDONIA. between Tio and Nékété: *Balansa 3469* (L), fl., (*= Poissonella baillonii non (Zahlbr.) Pierre, Not., bot. Sapot., 1890, 29 — Planchonella baillonii non (Zahlbr.) Dubard, 1912, 57 — Pouteria baillonii non (Zahlbr.) Baehni, 1942, 375).*

Remarks: In its leafshape this species resembles *P. baillonii* but is closely related to *P. pinifolia* on account of its vegetative and flower details, viz. the very few tertiary nerves, the small number of secondary nerves and the small angle between midrib and secondary nerves. The main differences are found in the brownish to blackish sericeous lower surface of the leaf and the larger number of secondary nerves in *P. baillonii*, the indumentum in *P. rheophytopsis* being whitish to yellowish sericeous and the number of secondary nerves 4—6. Both *P. pinifolia* and *P. rheophytopsis* have a short pedicel, non-crested sepals and lanceolate to linear (rarely petaloid) staminodes against the long pedicel, crested sepals and petaloid one- or two-dentate staminodes in *P. baillonii*. From *P. pinifolia* it differs in the broader mucronulate leaves, which are whitish to yellowish sericeous below against glabrous in *P. pinifolia*.

The specific epithet is used as the leaves closely resemble those of other species living in or near swift running streams. Under these conditions the leaves, and the remainder of the plant, show a rheophytic habit. This resemblance to a rheophyte induced the use of the name rheophytopsis.

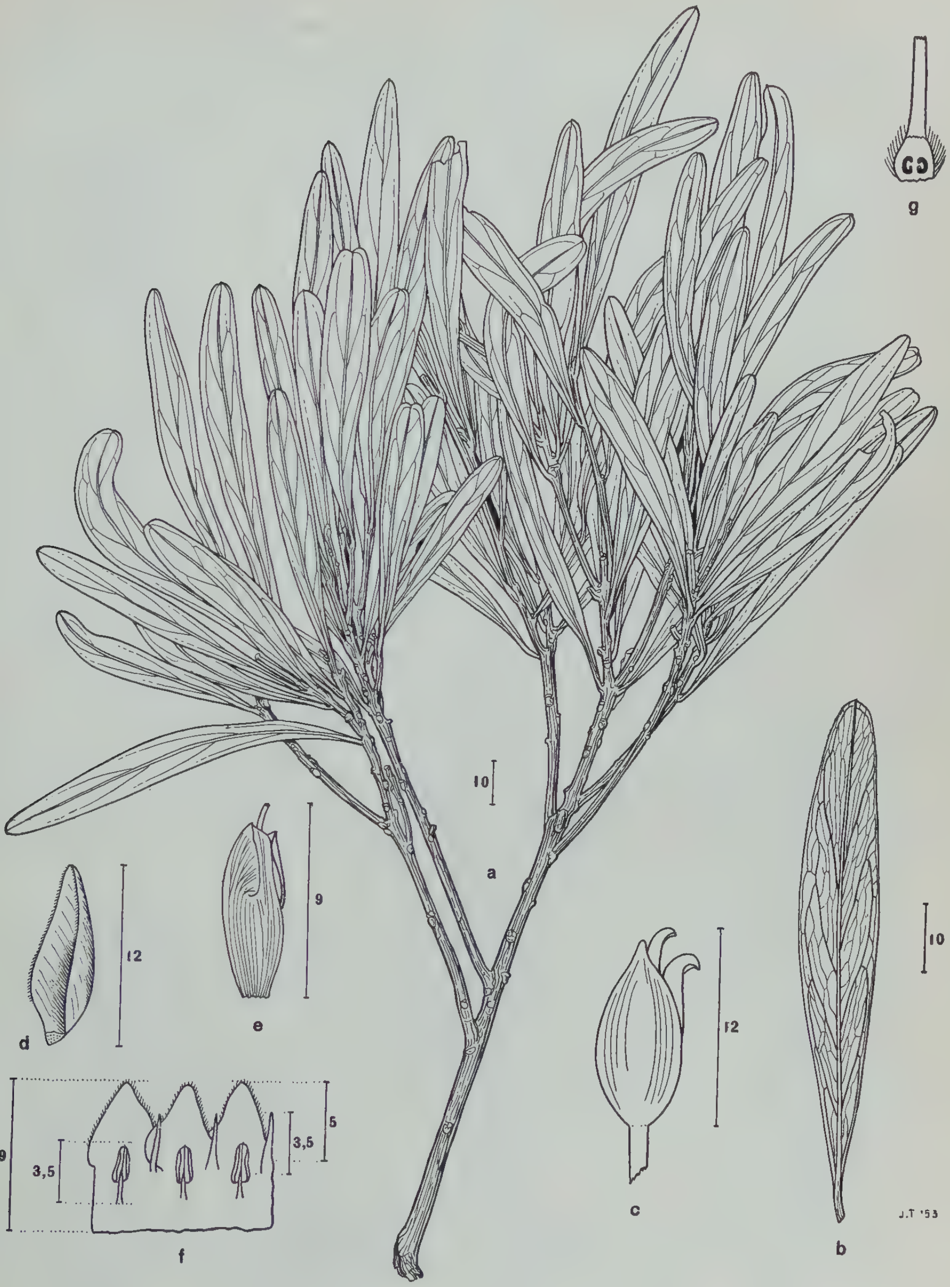

Fig. 8. *P. rheophytopsis*, a. habit, b. leaf from below, c. flowerbud, d. outer sepal, lateral view, e. corolla partly opened, f. corolla, inner view, g. longitudinal section of gynaecium. (*Balansa 3469*).

4. P. baillonii (Zahlbr.) Dubard, 1912, 57; Guillaumin, Bull. Mus. Nat. Hist. nat., sér. 2, 27, 1955, 327 — *Lucuma baillonii* Zahlbr., Oester. bot. Zeitschr. 39, 1889, 287; Däniker, Vierteljahrsschr. Nat. Ges. Zürich 78, 1933, 351 — *Poissonella baillonii* (Zahlbr.) Pierre, Not. bot. Sapot., 1890, 29 — *Pouteria baillonii* (Zahlbr.) Baehni, 1942, 375.

Shrubs, 2—4 m. Branchlets terete to angular, 2—4 mm in diam., striate or with a coarsely broken, greyish bark, greyish tomentose. *Leaves* conferted at apex of branchlets, oblong, 10—20 by 0.5—1.5 cm, apex obtuse, emarginate, base rounded; the two margins passing into the adaxial part of the petiole, margin involute, with a distinct nerve, glabrous and nitidous above but greyish villous in the basal part of midrib but soon glabrescent there, densely blackish, greyish or brownish tomentose below, coriaceous; midrib broadly impressed above, prominent below, secondary nerves 12—22 (or more ?), ascending at an angle of 30°—45°, straight, forked at tip and anastomosing and forming a nearly straight intramarginal nerve, prominulous to impressed above but in the basal part not differing from the tertiary nervation, invisible below, tertiary nervation reticulate, parallel to the secondary nerves, prominulous above, invisible below; petioles 10—20 mm long, narrowly canaliculate above, densely greyish tomentose. *Flowers* reddish, solitary; pedicels clavate, irregularly winged, 1.3—5 cm long, densely greyish or yellowish tomentose. *Sepals* triangular-ovate, 7—14 by 4—6 mm, acutely crested, yellowish puberulous without, ciliate or fimbriate along the margins, glabrous within. *Corolla* 13—18 mm long, lobes orbicular, 5—6 mm in diam. *Stamens* 5—6 mm long, inserted in the middle of the tube but filaments adnate to it and consequently the stamens sessile, filaments subulate, 3—4 mm long, anthers rhomboid, 2—2.5 mm long, obtuse and emarginate at apex, dehiscing laterally. *Staminodes* linear or subulate, 2—2.5 mm long, with an irregular one- or two-dentate tip. *Ovary* long-conoid, 4- or 5-celled, 5-ribbed, tapering into style, together up to 25 mm long, densely hirsute at base, the hairs in 4 or 5 bundles. *Juvenile* fruits 0.5 cm long, 1- to 3-seeded, brown, scar of seed linear.

Type specimen: *Vieillard 196* in W.

Distr.: New Caledonia.

NEW CALEDONIA. St. Vincent, along streams: *Vieillard 196* (L, W), fl.; banks of Dombeia river: *Franc 44* (P), fl.; ibidem: *Franc 202* (L, NSW, P, SING, Z), fl. Oct.; ibidem: *Balansa 462* (P), fl.; ibidem: *Balansa 1325* (P), fl.; banks of Comboui river, alt. 100 m, riverside and creekside rocks, serpentine: *Compton 2208* (BM, NSW), fl.; without known loc.: *Pancher s.n.* (G, L), fl.; Plaine des Lacs, near Madeleine mine, in scrub on serpentine: *Däniker 2799* (Z), large shrub, fl. reddish, Febr.; Prony, along creeks: *Guillaumin A 19* (Z), fl.; Yahoué, alt. 300 m: *Franc 140* (Z), fl. May (*this number is probably wrongly numbered*); along Fausse-Yaté, near bridge: *Hürlimann 645* (Z), shrub 2 m, fl. pink, Jan.; without known locality: *Baumann 15046* (Z), fl., *15301* (Z), fl., *10431* (Z), fl., *Guillaumin & Baumann 8350* (Z), juv. fr., *13063* (Z), fl., *13147* (Z), fl.

Remarks: The description of the fruit and seed are copied from Baehni, since I did not see any fruiting material.

Pierre, when using the name *Poissonella baillonii* (Zahlbr.) mentions

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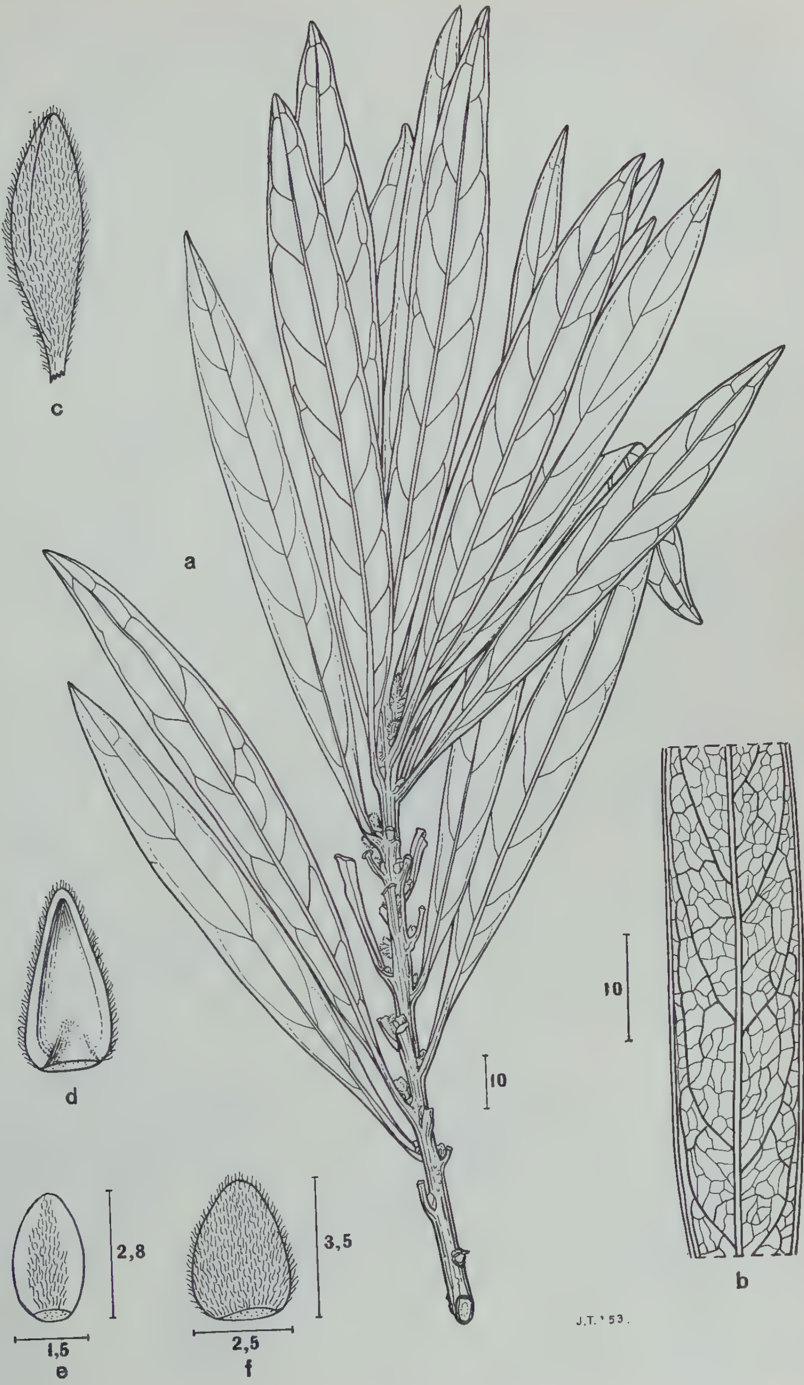
Fig. 9. *P. saligna*, a. habit, b. part of leaf from below, c. flowerbud, d. outer sepal, inside, e. inner sepal, inside, f. inner sepal, outside. (*Compton 1826*).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Balansa 3469 as belonging also to this species and *Vieillard 196* to *Poissonella neo-caledonica* Pierre. However, *Balansa 3469* is quite different from *Vieillard 196* and is regarded as the type specimen of a new species, *P. rheophytopsis*. *Vieillard 196* is the type specimen of *Planchonella baillonii* and therefore *Lucuma neo-caledonica* Pierre (= *Poissonella neo-caledonica* Pierre) must be regarded as a synonym of *Planchonella baillonii* (fide Baehni). This fact is already indicated by Dubard in 1912. Baehni also inserted *Balansa 3469* in *P. baillonii* and the same can be said here as before.

P. baillonii differs from *P. rheophytopsis* and *P. pinifolia* by the quite distinct tertiary nervation which is almost absent in the other species, and by the more numerous secondary nerves which ascend at a larger angle.

5. **P. saligna** Moore, J. Linn. Soc. 45, 1921, 353 — *Pouteria saligna* (Moore) Baehni, 1942, 331, p.p. — *Fig. 9.*

Shrubs, up to 3 m. Branchlets subterete or angular, c. 3 mm in diam., whitish or greyish sericeous, glabrescent. *Leaves* subconferted near apices of branchlets or scattered, linear or lanceolate, 9—13 by 1—1.4 cm, apex acute, base tapering; with a stout marginal nerve, glabrous and nitidulous on either side, coriaceous; midrib prominulous above, diminishing towards apex, secondary nerves 9—12, ascending at an angle of 25°—35°, curved, irregularly and sometimes indistinctly archingly joined, prominulous above, prominent below, tertiary nervation reticulate, prominulous on either side but more conspicuous below; petioles 3—6 mm long, flat above, sparsely whitish pilose, glabrescent. *Flowers* solitary, small; pedicels terete, 1—2 mm long, reddish puberulous. *Sepals* ovate or oblong, 3.5—4.5 by 1.5—2.5 mm, obtuse at apex, ferruginously pilose without, glabrous within. *Corolla* whitish, up to 3 mm long, lobes orbicular, c. 1.5 mm in diam. *Stamens* up to 1.5 mm long, inserted in the upper fourth, filaments subulate, c. 0.8 mm long, anthers unknown. *Staminodes* ligulate, c. 0.8 mm long. *Ovary* globose, c. 0.8 mm in diam., ferruginously villose; style cylindrical, c. 1 mm long *Fruits* unknown.

Type specimen: *Compton 1826* in BM.

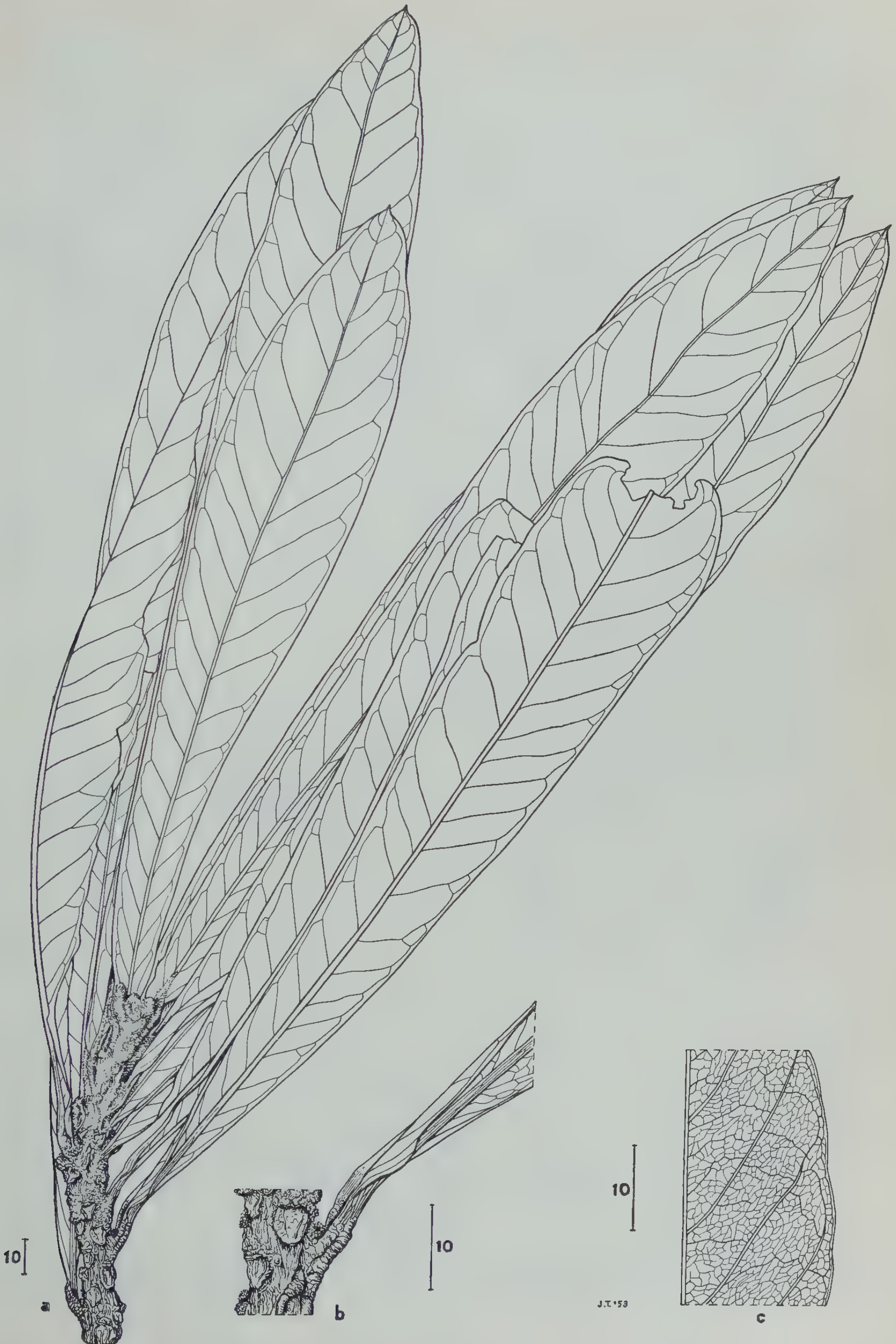
Distr.: New Caledonia.

New Caledonia. Mt Panié, alt. 400 m, among rocks near cascade: *Compton 1826* (BM, NSW), fl.; Cascade of Panié between Hienghène and Oubatche: *Balansa 3156* (P), fl.; Poila: *Vieillard 195 & 197* (P), fl.; Ténème river, in forest on banks, alt. c. 440 m: *Hürlimann 1900* (Z), tree 3.5 m, fl. and buds, Aug.; without known loc.: *Vieillard 566* (P), fl.

Remarks: This species differs from the others of Group 1 (except *P. pronyensis*) by the almost sessile flowers. In the indumentum of the sepals it shows a resemblance with that of the following group (e. g. *P. lanatifolia* and *P. novo-caledonica*). The leaves closely resemble those of *P. pinifolia*, *P. rheophytopsis* and *P. contermina* and thus have a distinct rheophytic character to which its habitat also points.

6. **P. pronyensis** Guillaumin, Bull. Mus. hist. nat. Paris, sér. 2, 5, 1933, 322 — *Pouteria saligna* (Moore) Baehni, 1942, 331, p.p. — *Fig. 10.*

Fig. 10. *P. pronyensis*, a. habit, b. basal part of leaf and part of branchlet, c. part of leaf from below. (*Franc 1601a*).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Shrubs. Branchlets stout, angular, c. 1 cm in diam., densely brownish woolly, glabrescent. *Leaves* conferted at apex of branchlets, spatulate-oblong or linear, 15—33 by 2—5 cm, apex obtuse or obtusely acuminate (acumen 1—2 mm), mucronate, rounded at base, shortly decurrent along petiole; margin involute, with a narrow but distinct marginal nerve; glabrous on either side, nitidous above, nitidulous below, sometimes ferruginously or blackish woolly at base of midrib, glabrescent, coriaceous; midrib flat or subimpressed and minutely crested above, except in the basal part, strongly prominent below, secondary nerves 17—26, ascending at an angle of 50°—60°, straight, archingly joined, prominent on either side, tertiary nervation laxly reticulate, subparallel to secondary nerves; petioles 2—10 mm long, grooved above, minutely crested below, densely ferruginously or blackish pilose. *Flowers* solitary or in few-flowered clusters; pedicels 0—2 mm long, brownish hirsute. *Sepals* ovate, 4—6 by 2—3 mm, apex obtuse or subacute, brownish hirsute without, glabrous within. *Corolla* c. 3 mm long, lobes orbicular, c. 1.5 mm in diam. *Stamens* 2—3 mm long, inserted slightly below the middle, filaments subulate, 0.5—1.5 mm long, anthers lanceolate, c. 1.5 mm long, apex acute, dehiscing laterally. *Staminodes* oblong, c. 1.5 mm long. *Ovary* ovoid-oblong, c. 1 by 1.5 mm, tapering into style, brownish puberulous; style subulate, 2—3 mm long. *Fruits* ovoid, 3—5-seeded, brownish hirsute, crowned by the up to 3 mm long style; seeds completely known.

Type specimen: *Franc A 1601* in P.

Distr.: New Caledonia.

NEW CALEDONIA. Prony, forested plateau: *Franc A 1601* (L, P, Z), fl. (fr. in P. only); ibidem: *Franc A 1601a* (P), fl.

Remarks: The description of the fruit is extracted from that given by Guillaumin as I did not see any fruiting material myself.

This species has been incorporated by Baehni in *Pouteria saligna* but the differences between the two species are evident. The leaves are lanceolate, acute, 9—13 by 1—1.4 cm, with an attenuate base and 9—12 curved secondary nerves ascending at an angle of 25°—35° in *P. saligna*, and spatulate-oblong, rounded or subacute and mucronate, 15—33 by 2—5 cm with a rounded base and c. 26 straight secondary nerves ascending at an angle of 50°—60° in *P. pronyensis*.

P. pronyensis and *P. salikna* have in common the subsessile to sessile small flowers and therefore, though related to *P. pinifolia, P. rheophytopsis*, and *P. baillonii* and less so to the other species of this group, they are somewhat placed apart by the flower characters; the same condition is found in *P. lanatifolia* and *P. novo-caledonica* of Group 2.

7. P. contermina Pierre in Dubard, 1912, 44, *nomen*; Pierre in Lecomte, Not. Syst. 2, 1913, 81, descr. — *Pouteria ? contermina* (Pierre) Baehni, 1942, 406 — *Fig. 11.*

Trees or shrubs ? Branchlets terete to angular, 1—3 mm in diam.,

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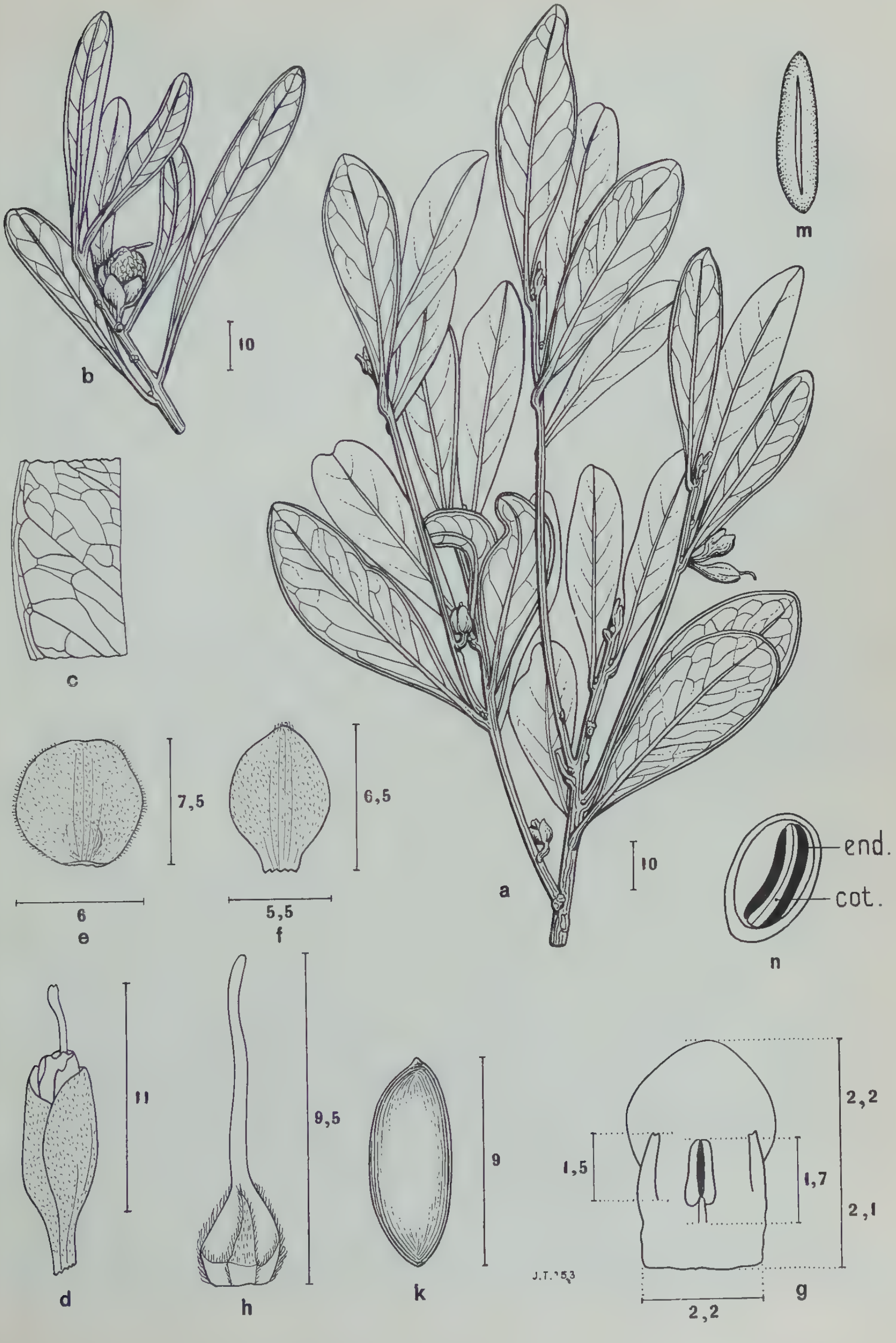
Fig. 11. *P. contermina,* a. habit, b. branchlet with fruit, c. part of leaf below, d. flowerbud, e. outer sepal, outside, f. inner sepal, outside, g. part of corolla, inside, h. gynaecium, k. seed, m. seed showing scar, n. transverse section of seed. (*Vieillard 2911*).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striate, dark greyish tomentose. *Leaves* conferted at apex of branchlets or scattered, obovate-oblong or narrowly elliptic to spatulate, 2—7 by 0.4—2 cm, apex obtuse, entire or emarginate, base attenuate; margin involute, with a strong marginal nerve; brownish or yellowish nitidous above, glabrous except in basal part and on midrib, greyish or blackish tomentose below, glabrescent except for midrib and nerves, coriaceous; midrib impressed above, prominent below, secondary nerves 4—8, ascending at an angle of 30°—50°, straight, distinct irregular archingly joined, prominent on either side, tertiary nervation laxly reticulate, inconspicuous to rather stout on either side; petioles 2—6 mm long, flat above, greyish tomentose. *Flowers* solitary or in few-flowered clusters; pedicels angular, 2—5 mm long, ferruginously puberulous. *Sepals* 5, outer ones ovate, 5—6.5 by 4.5—5.5 mm, coriaceous, apex obtuse, densely ferruginously puberulous without, with darker hairs at the tip, glabrous within, inner sepals orbicular, 6—7.5 mm in diam., apex obtuse, truncate or retuse, margins membranous and ciliate, ferruginously sericeous without, glabrous within. *Corolla* known in bud only, 3.5—4.5 mm long, lobes ovate, 2—2.5 by 2—2.5 mm, apex obtuse. *Stamens* 1.5—2 mm, inserted in the lower fourth, filaments subulate, c. 1 mm long, anthers ovate, c. 1.5 mm long, apex obtuse, entire or emarginate, dehiscing laterally. *Staminodes* subspatulate, 1—1.5 mm, with an irregular tip. *Ovary* ovoid, c. 2 by 2—3 mm, 5-celled, 5-lobed, blackish-brown hispidulous, style subulate, 6—8 mm long, terete but angular at base, glabrous, capitate, darker coloured below the stigmata. *Fruits* ovoid, 1—1.5 by 0.8—1 cm, crowned by the up to 8 mm long persistent style, 2—3-seeded, ferruginously tomentose, pericarp fleshy; seeds ellipsoid-fusiform, laterally compressed, 8—9 by 4.5—5.5 by 3—4 mm, obtuse to subacute at either end, sometimes mucronulate at apex, black or brown, nitidous, testa thin, solid, scar nearly as long as seed, c. 0.5 mm wide, whitish, albumen copious, cotyledons foliaceous, radicle cylindrical, 1—2 mm, apex obtuse, exserted.

Type specimen: *Deplanche 437* in P.

Distr.: New Caledonia.

NEW CALEDONIA. Mt Gomonen, near Gatope: *Deplanche (in Vieillard) 437* (K, P), fr.; ibidem: *Vieillard 2896* (BM, K, P), fr.; ibidem: *Vieillard 2911* (K, P), fl.

Remarks: The fruit being thusfar unknown it has been described after *Vieillardii 2911* in P.

P. contermina (as well as *P. saligna*) is intermediate between a group of species (*P. baillonii, P. rheophytopsis, P. pinifolia*) with conferted, narrow leaves with an indistinct tertiary nervation and large flowers, and a group represented by the rest of group 1 with scattered, obovate leaves with a sparse, stout tertiary nervation and small flowers. The leaves of *P. contermina* are sometimes narrow and thus resemble those of the first group, but sometimes leaves are found which are more or less obovate. The tertiary nervation is sometimes rather inconspicuous but sometimes distinct and then resembles that of *P. brousmichei.* The flowers are smaller than those of the first group but larger than those of the second group. In *P. saligna,* however, the flowers are small, but they are known in an undeveloped state only. The outer sepals are smaller than the inner ones while in Group 2 they are of the same size or even larger than the inner ones. The style is exserted but not so markedly as in e. g. *P. baillonii*, though always more than in the flowers of Group 2.

8. **P. guillauminii** H. J. Lam, Blumea 5, 1942, 9, f. 2 — *Pouteria ? guillauminii* (Lam) Baehni, 1942, 408.

Trees, 15—21 m. Branchlets slender, 2—4 mm in diam., appressedly pubescent, glabrescent. *Leaves* fairly conferted at apex of branchlets, spatulate or obovate, 4.5—9 by 1.3—3 cm, apex obtuse or rotundate, tapering from the widest part into the petiole; with a narrow marginal nerve; nitidous above, dull below, appressedly pubescent when young, ultimately glabrous, chartaceous; midrib prominent above in basal part only, prominent below, secondary nerves 6—8, ascending at an angle of 35°—50°, straight, archingly joined near margin, prominent on either side, tertiary nervation laxly reticulate, generally parallel to the secondary ones, prominulous on either side; petioles 2—10 mm long, obtusely crested above, whitish sericeous. *Flowers* unknown; pedicels of fruit 2—4 mm long, ferruginously sericeous. *Sepals* broadly ovate, 3—4 by 3—4 mm, sericeous without, glabrous within. *Fruits* ovoid to oblong, 1.5—2 by 0.7—1.5 cm, distinctly beaked by the permanent 2—3 mm long style, 1—3-seeded, pericarp hard, black, greyish sericeous; seeds ellipsoid, c. 1.6 by 0.7 by 0.5 cm, compressed at one side, acute at either end, brown but towards the scar yellow, nitidous, scar as long as the seed, 1—2 mm wide, embryo unknown.

Type specimen: *Kajewski 385* in K.

Vern. name: ney-mor (Eromanga Island).

Distr.: New Hebrides and Solomons.

NEW HEBRIDES. Eromanga, Dillon Bay, alt. 300 m, in rain forest: *Kajewski 385* (A, K), tree 25 m, fr. June — Aneityum, Anelgauhat Bay, alt. 150 m, in rain forest: *Kajewski 936* (A, BRI, K, SING), tree 15 m, juv. fr. March.

SOLOMONS. East Makira, Star Harbour, hill rainforest, alt. 100 m: *Walker BSIP 267* (BRI), tree c. 30 m, March (as *Planchonella costata non* [*Endl.*] *Pierre, White in J. Arnold Arb. 31, 1950, 107—108*).

9. **P. laetevirens** (Baillon) Pierre in Dubard, 1912, 47 — *Lucuma ? laetevirens* Baillon, Bull. Soc. Linn. Paris 2, 112, 1890, 894 — *Pouteria laetevirens* (Baillon) Baehni, 1942, 377 — *Fig. 12.*

Trees or shrubs, 5—10 m. Branchlets subterete to angular, 4—6 mm in diam., ferruginously tomentose at the tips only. *Leaves* subconferted at apex of branchlets, lanceolate or obovate, (6—)10—18 by (1.5—)2.5—5 cm, apex acutely or obtusely acuminate (acumen 2—5 mm), attenuate at base, tapering into petiole; with a narrow marginal nerve; glabrous on either side, nitidous above, nitidulous below, coriaceous-chartaceous; midrib impressed above, prominent below, secondary nerves 7—13, ascending at an angle of 40°—65°, curved, archingly joined, prominent on either side, tertiary nervation mainly transverse, sometimes subtransverse or reticulate, prominulous on either side; petioles 1—1.5 cm long, broadly impressed above, carinate below, glabrous. *Flowers* white, solitary or in few-flowered clusters; pedicels subterete, 2—5 mm long, glabrous. *Sepals* 5, outer ones ovate or suborbicular, 6—7 by 5—6 mm, apex subacute, glabrous on either side, except for a few ferruginous hairs at the tip, inner sepals broadly elliptic, 6.5—7.5 by 5—6 mm, apex obtuse to retuse, margins membranous, fimbriate, densely ferruginously sericeous without, glabrous within. *Corolla*

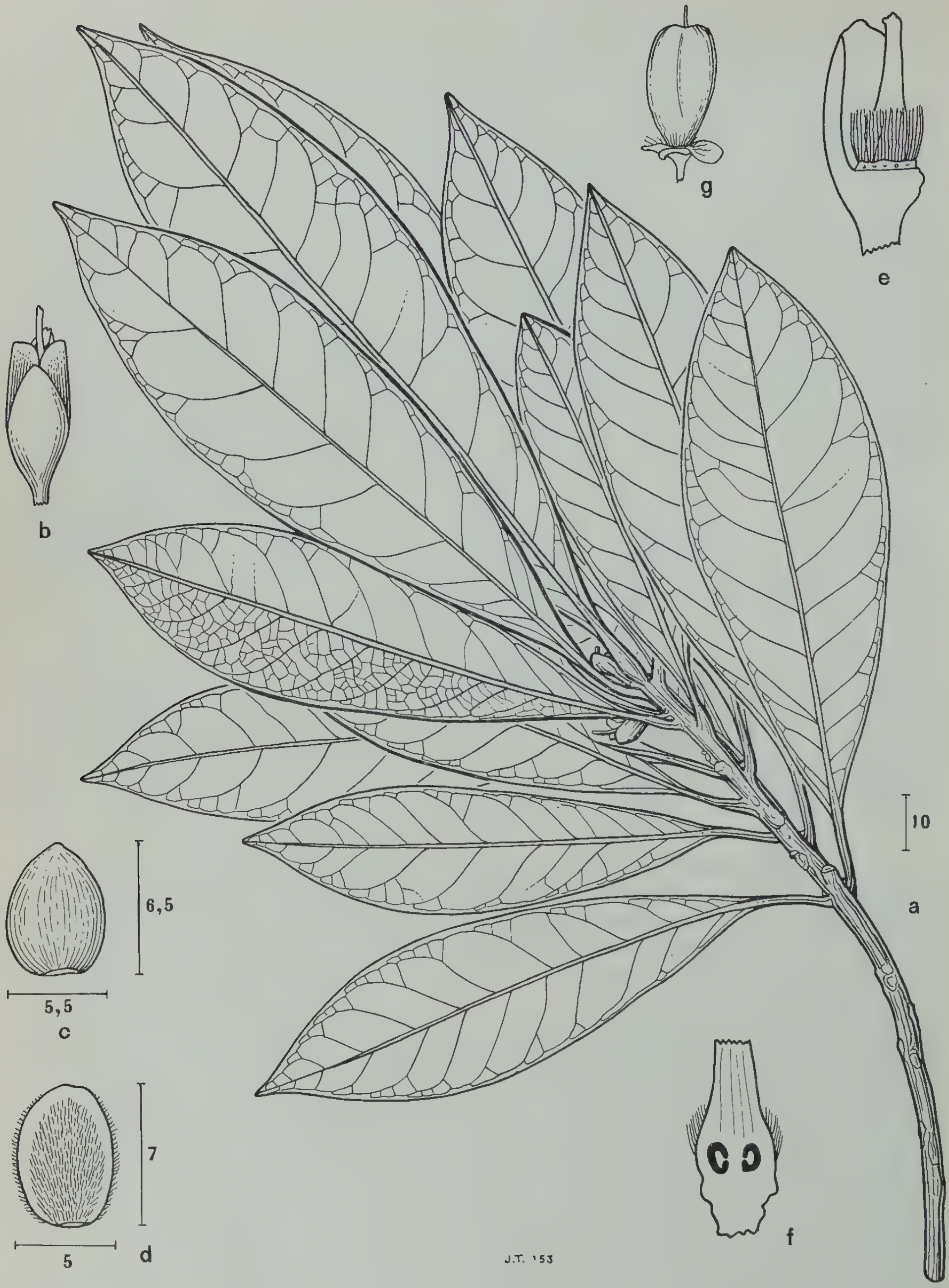


Fig. 12. *P. laetevirens,* a. habit, b. flowerbud, c. outer sepal, outside, d. inner sepal, inside, e. gynaecium, f. longitudinal section of gynaecium, g. fruit. (a—f. from *Balansa 3464,* g. from *Hürlimann 1592*).

up to 9 mm long, lobes oblong, up to 3 mm long, apex obtuse to rounded. *Stamens* 1.5—2 mm long, inserted in the apical part, anthers ovoid, c. 1 mm long, apex obtuse, dehiscing extrorsely. *Staminodes* lanceolate, c. 1 mm long. *Ovary* ovoid ,tapering into style, 2—3 by c. 1.5 mm, ferruginously tomentose, 5-celled, style stout, 5—6 mm long. *Fruits* subobovoid, c. 2 by 1.5 cm, glabrous, base surrounded by a ring of long yellowish hairs, apex with prolonged, up to 5 mm long style which is hairy at its base, probably 5-seeded, pericarp fleshy, seeds unknown.

Type specimen: *Balansa 3464* in P.

Distr.: New Caledonia.

New Caledonia. Mt Pénari: *Balansa 3464* (K, P), fl.; Mt Thoniambo: *Guillaumin & Baumann 9518* (Z), fl. Dec., shrub 10 m; lateral valley of Pourina valley, mesophyl forest, alt. 150 m: *Hürlimann 1479* (Z), tree 5 m, fl. buds June; valley between Blanche and Yaté rivers, mesophyl forest: *Hürlimann 1548* (Z), tree 5 m, fl. buds green, June; Sunshine-Dumbéa valley, primary forest, alt. c. 560 m: *Hürlimann 1592* (Z), tree 8 m, fl. buds and fr. green, July.

Remarks: The fruit has been described after *Hürlimann 1592* in Zürich. Dubard points out that this species is "assez aberrante et son attribution au genre Planchonella ne nous paraît pas certaine, la graine n'étant pas connue". Though this species is still aberrant in its group, it probably belongs to *Planchonella*. The solitary, rather large flowers which in almost all details match the type of flower of *P. baillonii, P. rheophytopsis,* and *P. pinifolia* point to Group 1. The characters of the leaf are aberrant, as the tertiary nervation is transverse, though there are only a few nerves of this type, the tertiary nervation being generally reticulate between the transverse nerves. The same type of nervation is also found in *P. vieillardii, P. brousmichei* and *P. skottsbergii* and still more in *P. pronyensis.* This seems to be ample reason to insert this species, provisionally, in Group 1.

10. P. cinerea (Pancher) van Royen, nov. comb. — *Sersalisia cinerea* Pancher in Baillon, Bull. Soc. linn. Paris, 2, 114, 1891, 905 — *Planchonella pancheri* Pierre, Not. bot. Sapot., 1890, 35, *nomen nudum*; Däniker, Vierteljahresschr. Naturf. Ges. Zürich 78, 1933, 355; Guillaumin, Bull. Mus. Nat. hist. Paris, sér. 2, 27, 1955, 327 — *Pouteria cinerea* (Pancher) Baehni, 1942, 339 — *Fig. 13.*

Shrubs or trees, 3—10 m. Branchlets subterete to angular, 2—3 mm in diam., greyish or ferruginously puberulous, glabrescent. *Leaves* scattered to subconferted, spatulate, obovate or cordate, 2—8 by 1—3.5 cm, apex obtuse, entire or emarginate, base cuneate, tapering into petiole; with a narrow marginal nerve; glabrous, sometimes greyish or brownish puberulous below, ultimately glabrous, nitidous above, nitidulous below, chartaceous to coriaceous; midrib flat above and prominulous, prominent below, secondary nerves 4—6, ascending at an angle of 25°—35°, straight, archingly joined, sometimes irregularly so, prominent on either side; petioles 1—5 mm long, sometimes subsulcate above, greyish puberulous but glabrescent. *Flowers* solitary or in few-flowered clusters; pedicels angular, 3—5 mm long, yellowish or ferruginously sericeous. *Sepals* orbicular to broadly ovate, 4—4.5 mm in diam., yellowish or ferruginously sericeous without, glabrous within, inner ones membranous along the margin and fimbriate. *Corolla* white or greenish, 3.5—5 mm long, lobes broadly elliptic or orbicular, 2.5—3

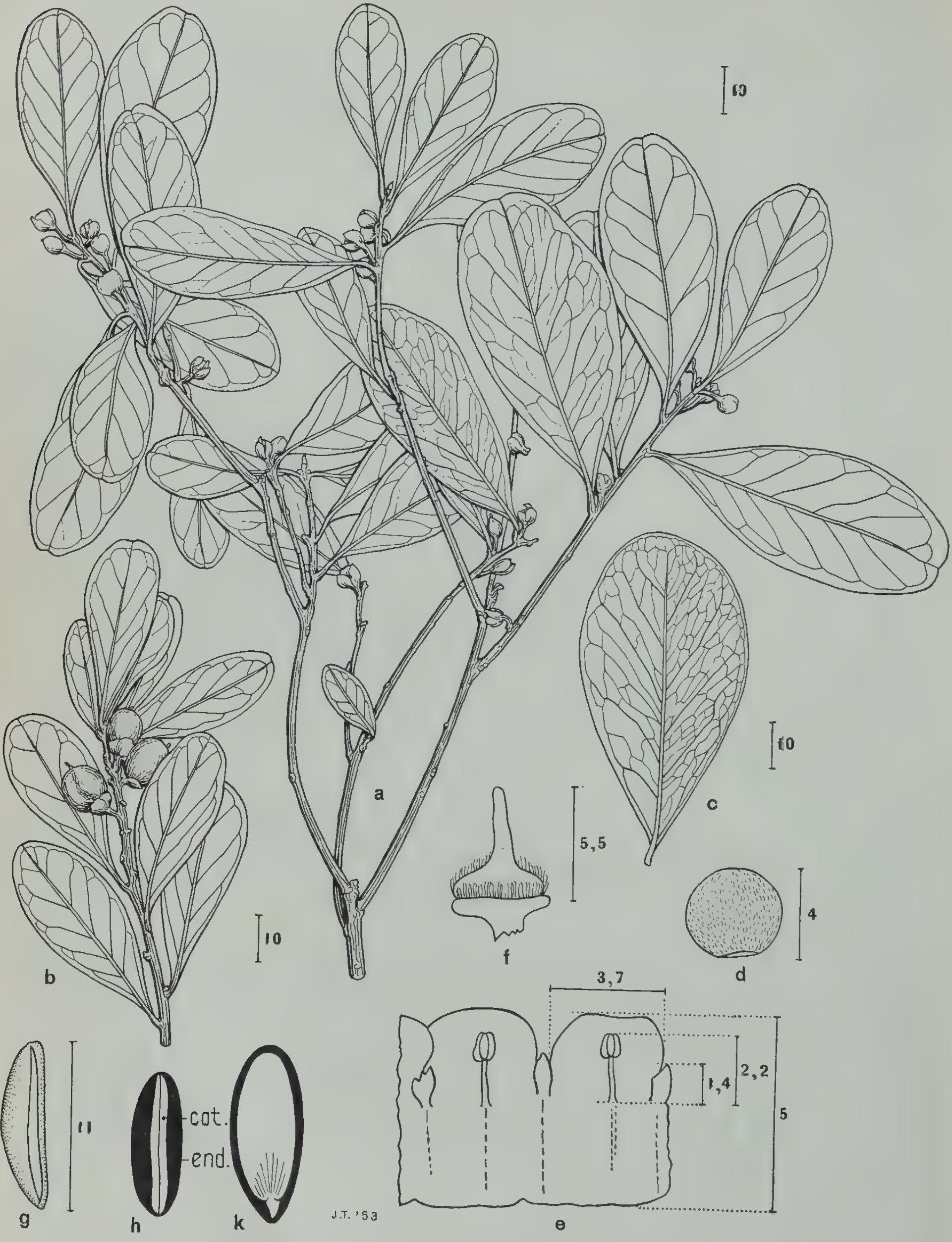


Fig. 13. *P. cinerea,* a. branchlets with flowers, b. idem, with fruits, c. leaf from below, d. sepal, outside, e. part of corolla, inside, f. gynaecium, g. seed, h. transverse section of embryo, k. longitudinal section of embryo. (*Pancher 252*).

by 3.5—4 mm, crispate, rounded, truncate or retuse, margin sometimes sparsely ciliate. *Stamens* 2—2.5 mm long, inserted slightly above the middle of the tube, sometimes a few sterile, filaments 1—1.5 mm long, subulate, anthers elliptic ovate or cordate, c. 1 mm long, apex obtuse, emarginate, dehiscing laterally. *Staminodes* spatulate, elliptic or ovate, 1—1.5 mm, apex acute or irregularly serrate at the tip. *Ovary* conoid, ovoid or globose, 1.5—2 by 3—3.5 mm, 4- or 5-celled, 5-lobed, ferruginously tomentose; style subulate, stout, 3—3.5 mm long. *Fruits* obovoid, ovoid or globose, 2—5-seeded, apex with a 2—5 mm long remnant of the style, ferruginously sericeous, glabrescent, black, pericarp fleshy; seeds obliquely ellipsoid, sometimes flattened at one side, 4.5—12 by 2—6 by 3—7 mm, acute or subacute at either end, black or brown, but lighter towards the scar, the latter linear or ovate-oblong, nearly as long as the seed, 1—1.5 mm wide, albumen copious, cotyledons foliaceous, radicle cylindrical, c. 1.5 mm, acute, exsert.

Type specimen: *Vieillard 881* in P.

Vern. name: azou.

Distr.: New Caledonia and surrounding coral-islands.

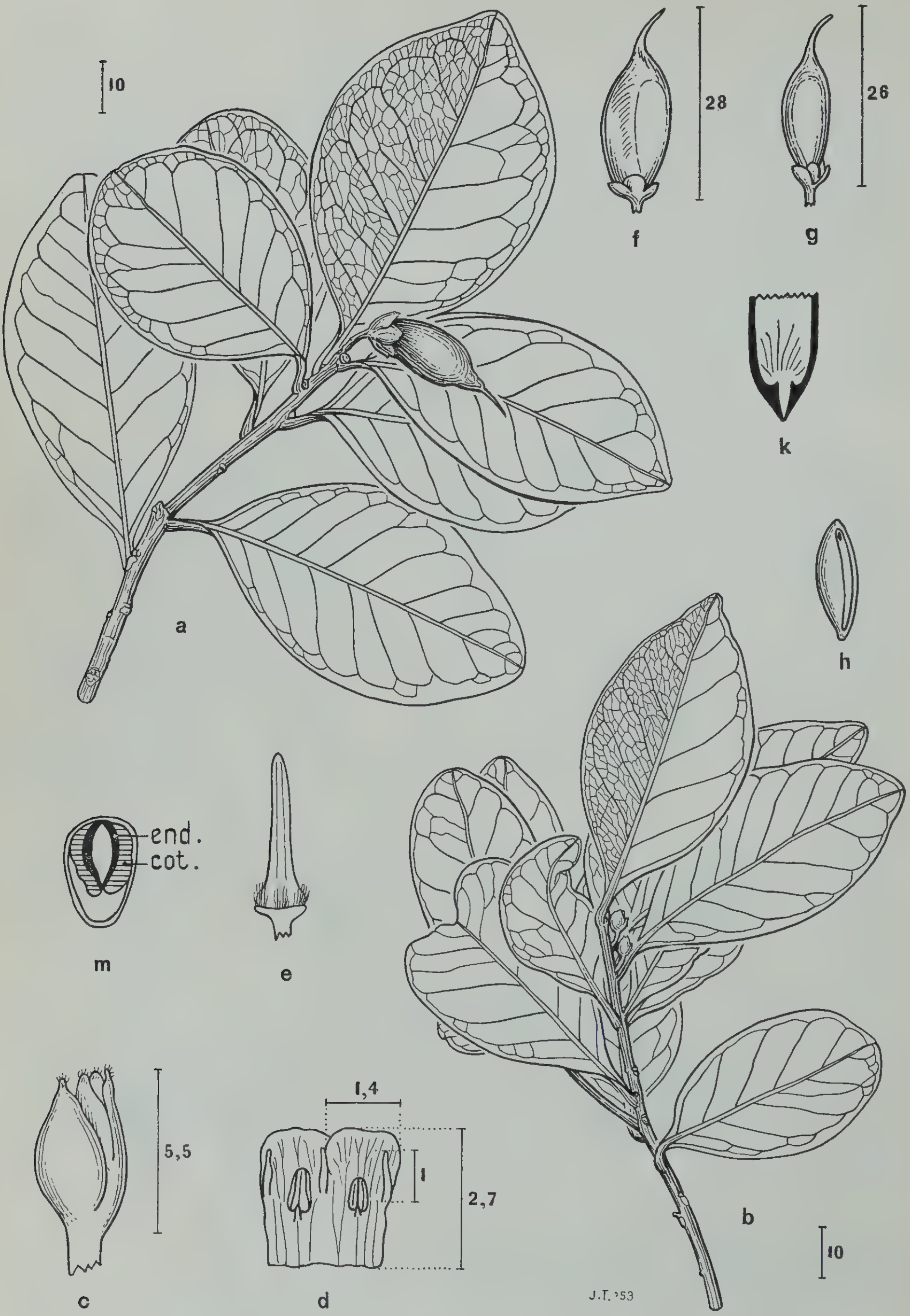
New Caledonia. on coral-islands, along or near the coast: *Vieillard 881* (BM, K, P), common tree 10 m, lvs glaucous green, fl. greenish, fr.; at the mouth of the Nera river, forest: *Balansa 599* (BM, P), fr.; ibidem: *Balansa 1274* (P), fl. March; mountains of Balade: *Vieillard 879* (P), fl.; Kanala: *Vieillard 2909* (BM, K); Noumea, in small coastal shrub: *White 2100* (BRI, K), tree c. 6 m, fr. Oct.; Noumea, near Anse Vata: *Däniker 1005* (Z), small tree, fr. Jan. (*P. cotinifolia non* [*DC*] *Dubard, Däniker in Vierteljahrsschr. l. c., 1933, 352)*; Noumea, Magenta Bay: *Däniker 991* (Z), small tree, fl. Jan.; Mt Ravel: *Däniker 2700* (Z), tree, fl. white, Jan.; South Bay, between N'Go Bay and Toueourou: *Rohrdorf 186* (Z). juv. fr., Sept.; Tamburoeu Island: *Deplanche 307* (K, P, Z), shrub 3 m, fr. July; Maitre Island near Nouméa, secondary forest: *Guillaumin & Hürlimann 698* (Z), tree 8 m, fl. fr. yellow, Jan.; southern slope of Paoué (Tipindjé) valley, meso-xerophytic forest: *Hürlimann 1172* (Z), tree 6 m, fl. green, April — without locality: *Baumann 5038* (Z), fr.; *5058* (Z), fr.; *9769* (Z), juv. fr.; *11447* (Z), fl.; *13815* (Z), fr.; *15582* (Z), fr.; *Guillaumin & Baumann 11069* (Z); *11085* (Z); *Bernier 7834* (Z), fr.; *12027* (Z), juv. fr.; *Baas Becking 6180* (Z), fr.

Remarks: The type specimen chosen is *Vieillard 881*, but is erroneously mentioned by Baillon as *Pancher 252*. This mistake has probably arisen because on the label the number *252* is indicated as the number of the New Caledonia Museum and this specimen later became a part of Pancher's herbarium.

P. cinerea is inserteed in this Group but could as well be inserted in the 6th Group, the *P. obovata*-group, but on account of its weakly developed tertiary nervation and its large flowers it is inserted here. Also its fruits resemble more those of Group 1 than those of Group 6, in the latter the remnant of the style being either absent or very short, while in Group 1 this remnant is always rather more distinct and long. The often subconferted leaves also point more to Group 1 than to the *obovata*-group (6) where the leaves are scattered.

11. P. reticulata (Baillon) Pierre in Dubard, 1912, 45 — *Sideroxylon reticulatum* Baillon, Bull. Soc. linn. Paris 2, 112, 1890, 891 — *Pouteria ? viscosa* Baehni, 1942, 414 — *Fig. 14*.

Shrubs, 2—3 m. Branchlets terete, 1.5—3 mm in diam., glabrous. *Leaves* subconferted or scattered, ovate, elliptic, elliptic-oblong, or sub-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orbicular, sometimes subrhombate, 3—12 by 2.5—6 cm, apex rounded or obtusely acuminate, acumen 2—8 mm long, base attenuate and decurrent; with a rather distinct intramarginal nerve; coriaceous, glabrous, highly nitidous above, dull below; midrib prominulous above or flat, sometimes slightly grooved in the basal part, prominent below, secondary nerves 6—13, ascending at an angle of (40°—)55°—70°, straight, archingly joined, stoutly prominent on either side, tertiary nervation reticulate, stout, sparse, prominent on either side; petioles 3—20 mm, flat above, widened at base, glabrous. *Flowers* solitary, corolla known in bud only; pedicels 1.5—5 mm, whitish to yellowish sericeous. *Sepals* broadly ovate, 5—6 by 3.5—4.5 mm, apex obtusely acuminate, sparsely yellowish sericeous without, apex with darker hairs, glabrous within, inner sepals with membranous margin. Juvenile *corolla* c. 2.5 mm, lobes obovate-quadrangular, 1—1.5 by 1—1.5 mm, apex truncate or retuse. *Stamens* c. 1 mm, inserted in the basal fourth, filaments subulate, c. 0.5 mm, anthers ovoid, c. 0.8 mm, apex obtuse or truncate, dehiscing laterally. *Staminodes* lanceolate, c. 1 mm, apex obtuse or acute, or irregularly lobed. *Ovary* ovoid, c. 1 by 1.5 mm, 5-celled, ferruginously tomentose, with 5 bundles of ferruginous long hairs at the base; style cylindrical, 2—3 mm. *Fruits* ellipsoid or ovoid, sometimes oblique, 2—2.5 by 0.8—1.5 by 0.6—0.8 cm, 1- or 2-seeded, apex provided with an up to 10 mm long remnant of the style, ferruginously puberulous, glabrescent, pericarp fleshy, viscose; seeds fusiform-obovoid, oblique and slightly flat at one side, apex subacute, base obtuse, dark brown, nitidous, scar almost as long as the seed, 1.5—2 mm wide, light brown, dull, albumen copious, cotyledons foliaceous, radicle conoid, 1.5—2 mm, acute, exsert. Calyx in fruit enlarged up to 8 mm in diam.

Type specimen: *Balansa 1827* in P.

Distr.: New Caledonia and Lord Howe Island.

New Caledonia. Kanala, lateritic soil along banks: *Balansa 1827* (P), shrub 2—3 m, fr.; ibidem: *Vieillard 2909* (K), fl.; without loc.: *Baumann 13977* (Z).

Lord Howe Isl., without loc.: *Boorman s.n.* (BRI), fl. May.

Remarks: Erroneously Dubard 1912, in the type specimen quotes the collectors' number *1826*.

This species is closely related to *P. microphylla* in its foliar details but the flowers are quite different and confer with those of the other species in this Group 1.

12. P. lauracea (Baillon) Dubard, 1912, 44 — *Sideroxylon ? lauraceum* Baillon, Bull. Soc. linn. Paris 2, 112, 1890, 890 — *Pouteria lauracea* (Baillon) Baehni, 1942, 339.

Shrubs, 1—2 m. Branchlets terete to angular, 1.5—4 mm in diam., ferruginously, yellowish or greyish tomentose. *Leaves* subconforted or scattered, obovate or cordate, 4—9 by 2—3.5 cm, apex rounded, retuse or emarginate, base broadly cuneate and sometimes oblique; margin involute, with a stout intramarginal nerve; dark brown-yellowish or greyish pilose

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Fig. 14. *P. reticulata,* a. branchlet with fruit, b. branchlet with flowers, c. flowerbud, d. corolla, inside, e. gynaecium, f–g. fruit, h. seed, k. longitudinal section of embryo, m. transverse section of seed. (a, f, g, h, k and m from *Balansa 1927,* b, c, d, e from *Vieillard 2909*).

above and glabrescent, but sometimes not completely so, densely ferruginously, greyish or yellowish puberulous below; midrib prominulous and acutely crested above, prominent below, secondary nerves 6—10, ascending at an angle of 35°—55°, straight, irregularly archingly joined, prominulous on either side, tertiary nervation laxly reticulate, subparallel to the secondary nerves, prominulous on either side; petioles (2—)5—10 mm, flat above but sometimes canaliculate, acutely crested below, densely ferruginously or greyish puberulous. *Flowers* solitary or in few-flowered clusters; pedicels terete, 2—3 mm long, ferruginously sericeous. *Sepals* orbicular or broadly ovate, 3—5 mm long and wide, ferruginously sericeous without, glabrous within, inner ones with membranous margin and apiculate. *Corolla* seen in bud only, lobes orbicular to oblong, c. 1 by 1 mm, rounded. *Stamens* 0.6—1 mm, inserted in the basal fourth, filaments flat, c. 0.5 mm, anthers ovoid-oblong, c. 0.7 mm, apex obtuse, dehiscing laterally. *Staminodes* lanceolate or linear, c. 0.8 mm long, with 1 or 2 acute tips. *Ovary* ovoid, c. 0.5 mm in diam., c. 0.2 mm high, 5-celled, ferruginously tomentose; style stout, 5-ribbed, 1—1.5 mm. *Fruits* ovoid or globose, 2—2.5 by 1.5—2 cm, apex with a 2—5 mm long remnant of the style, 1—5-seeded, brownish, ferruginously tomentose, pericarp fleshy; seeds obliquely ellipsoid, c. 16 by 8 by 6 mm, obtuse at either end, brown, nitidous, scar as long as the seed, c. 1.5 mm wide, albumen copious, cotyledons foliaceous, radicle cylindrical, 1—2 cm, obtuse, exsert.

Type specimen: *Balansa 3467* in P.

Distr. New Caledonia.

NEW CALEDONIA. Dotio basin, on volcanic soil: *Balansa 3467* (P), shrub 1—2 m, fl. & fr. Dec.

13. P. dictyoneura (Baillon) Pierre, Not. bot. Sapot., 1890, 36; Dubard, 1912, 45; Däniker, Vierteljahrsschr. Nat. Ges. Zürich 78, 1933, 352 — *Sideroxylon dictyoneuron* Baillon, Bull. Soc. linn. Paris 2, 112, 1890, 889 — *Pouteria koghiensis* Baehni, 1942, 295 — *Fig. 15.*

Shrubs or trees, 2—5 m. Branchlets angular, 3—7 mm in diam., ferruginously or greyish tomentose. Leaves mostly conferted at apex of branchlets, sometimes scattered, elliptic, spatulate, or obovate, 7—15 by 2.5—5 cm, apex retuse, obtuse or apiculate, base attenuate, decurrent; margin involute, with a distinct intramarginal nerve; coriaceous, juvenile leaves greyish or ferruginously tomentose on either side, mature ones glabrous and nitidous above, tomentose below; midrib prominulous above, prominent below and minutely crested, secondary nerves 7—10, ascending at an angle of 35°—55°, straight or slightly S-shaped, archingly joined, prominent on either side, tertiary nervation laxly reticulate, prominulous on either side, often inconspicuous above; petioles 3—20 mm, flat above and sometimes provided with 2 narrow ribs which pass into the margins of the leaf, greyish or ferruginously tomentose when young but later tomentose below only. *Flowers* solitary, or in few-flowered clusters; pedicels terete, 1—2 mm, ferruginously tomentose, glabrescent. *Sepals* ovate, 2.5—6 mm long, obtuse at apex, ferruginously tomentose without, glabrous within. *Corolla* 5—7 mm, lobes suborbicular or oblong, 2.6—3.7 by 2.5—3.5 mm, apex rounded, margin ciliate. *Stamens* 2—2.5 mm, inserted in the lower third, filaments membranous, c. 1 mm, anthers ovoid, 1—1.5 mm, apex mucronate, dehiscing extrorsely. *Staminodes* elliptic or ovate, 1—1.5 mm, apex obtuse, aristate or irregularly dentate, membranous. *Ovary* ellipsoid to broadly conoid, 1.5—2 by 1—1.5 mm, 5-lobed, densely tomentose; style cylindrical or clavate, 2—2.5 mm, capitate. *Fruits* obliquely obovoid or fusiform, flattened, 2.5—3.5 by 1—1.5 by 0.5—1 cm, apex with a 2—7 mm long, persistent style, 1—3-seeded, dark brown or ferruginously tomentose, brown, pericarp fleshy, solid; seeds fusiform, 1.5—2 by 0.6—0.8 by 0.5—0.7 cm, obtuse or subacute at either end, apex sometimes falcate, brown, nitidous, lighter towards the scar, the latter nearly as long as the seed, 1—2 mm wide, white or yellowish, albumen copious, cotyledons foliaceous, radicle cylindrical, curved at the tip, 0.5—1.5 mm, acute, exsert.

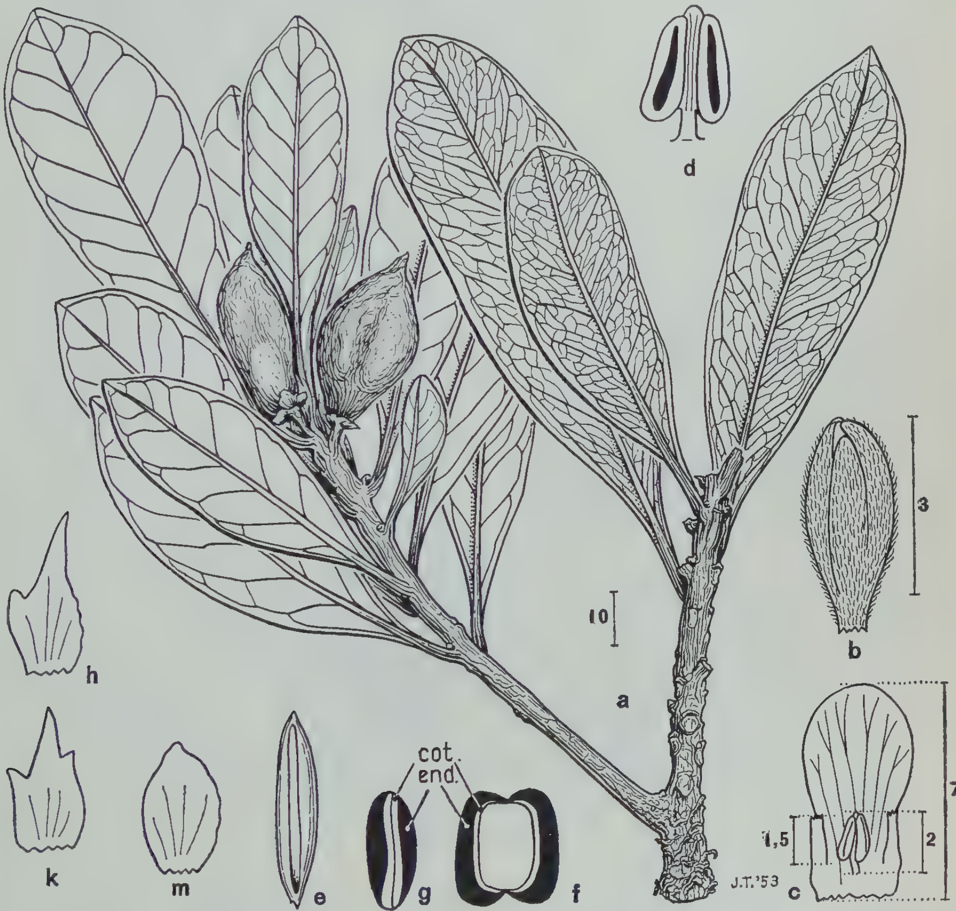


Fig. 15. *P. dictyoneura*, a. habit, b. flowerbud, c. part of corolla, inside, d. stamen, e. seed, f–g. transverse section of embryo, h–m. staminodes. (*Balansa 460*).

Type specimen: *Balansa 460* in P.

Distr.: New Caledonia.

New Caledonia. Kougui Mt (*erroneously Koghi, f. Baehni*), alt. 1050 m: *Balansa 460* (P), shrub 2—3 m, fl. & fr. Nov.; Prony, maritime region: *Le Rat & Le Rat 1578* (P), shrub 3 m, juv. fl.; Mt Dzumac: *Le Rat & Le Rat 213* (P), fl. Dec.; ibidem: *Le Rat & Le Rat 2959* (P), tree 4—5 m, fl. & fr., April; Mt Doita: *Vieillard 553* (P), shrub, fr.; Mt M'bée: *Vieillard 556* (P), fr.; Koniambo Cone, serpentine, 800—850 m: *Däniker 967* (Z), higr tree; Tiebaghi Cone, Néhoué valley, in bush along slope: *Däniker 1508* (Z), high shrub, fl. March; Dombea, dry regions along Dombea river: *Franc 824* (Z), fr. March; ibidem: *Franc 20 & 66* (P), fl.; mountains near Ngoye: *Schlechter 15213* (BM), fl. Nov.; Montagne des Sources, primary forest, alt. 980 m: *Hürlimann 1000* (Z), tree 3.5 m, fr. March; without loc.: *Baumann 1036* (Z), fl.; *14865* (Z), juv. fl.; *14905* (Z), fr.; *15690* (Z), fr.; *15712* (Z), fr.; *15782* (Z), st.

14. P. brousmichei (Baillon) Dubard, 1912, 44 — *Sideroxylon brousmichei* Baillon, Bull. Soc. linn. Paris 2, 111, 1890, 885 — *Pouteria brousmichei* (Baillon) Baehni, 1942, 340 — *Fig. 16.*

Trees or shrubs ? Branchlets stout, terete, 4—8 mm in diam., angular, ferruginously tomentose. *Leaves* conferted at apex of branchlets, spatulate, 6—18 by 2.5—5 cm, apex obtuse or very shortly obtusely acuminate, entire or retuse, base attenuate and decurrent; margin subinvolute, with a stout intramarginal nerve; nitidulous and glabrous above, except along midrib and near petiole, densely brownish or yellowish tomentose below; midrib prominulous and flat above, apical part minutely crested, prominent below, secondary nerves 7—10, ascending at an angle of (40°—)45°—65°, curved, prominent on either side, archingly joined, tertiary nervation subparallel to secondary nerves, reticulate, sometimes near margin some S-shaped and transverse nerves, prominulous on either side; petioles 3—3.5 cm, flat above, subcarinate below, greyish or yellowish tomentose. *Flowers* in clusters or solitary; pedicels angular, 1—2 cm, ferruginously tomentose, or woolly. *Sepals* ovate to orbicular, 5—5.5 by 4.5—5.5 mm, apex obtuse or shortly obtusely acuminate, densely ferruginously tomentose without and along margin, glabrous within, inner ones with membranous, lacerate margin. *Corolla* 4.5—5 mm, lobes oblong, obovate or orbicular, 1.5—2 mm long and wide, truncate, entire or retuse. *Stamens* 1.5—2 mm, inserted in the middle, filaments subulate, c. 0.8 mm, anthers sagittate, c. 1.2 mm, with widened connective and 2 acute tips, dehiscing lateral-extrorsely. *Staminodes* linear, c. 1.1 mm, apex obtuse or irregularly dentate. *Ovary* ovoid, c. 1 mm high, c. 2 mm in diam., 4- or 5-celled, 5-lobed, hispidulous; style 3—5 mm long, 5-ribbed, or subterete. *Fruits* unknown.

Type specimen: *Montrouzier s.n.* in P.

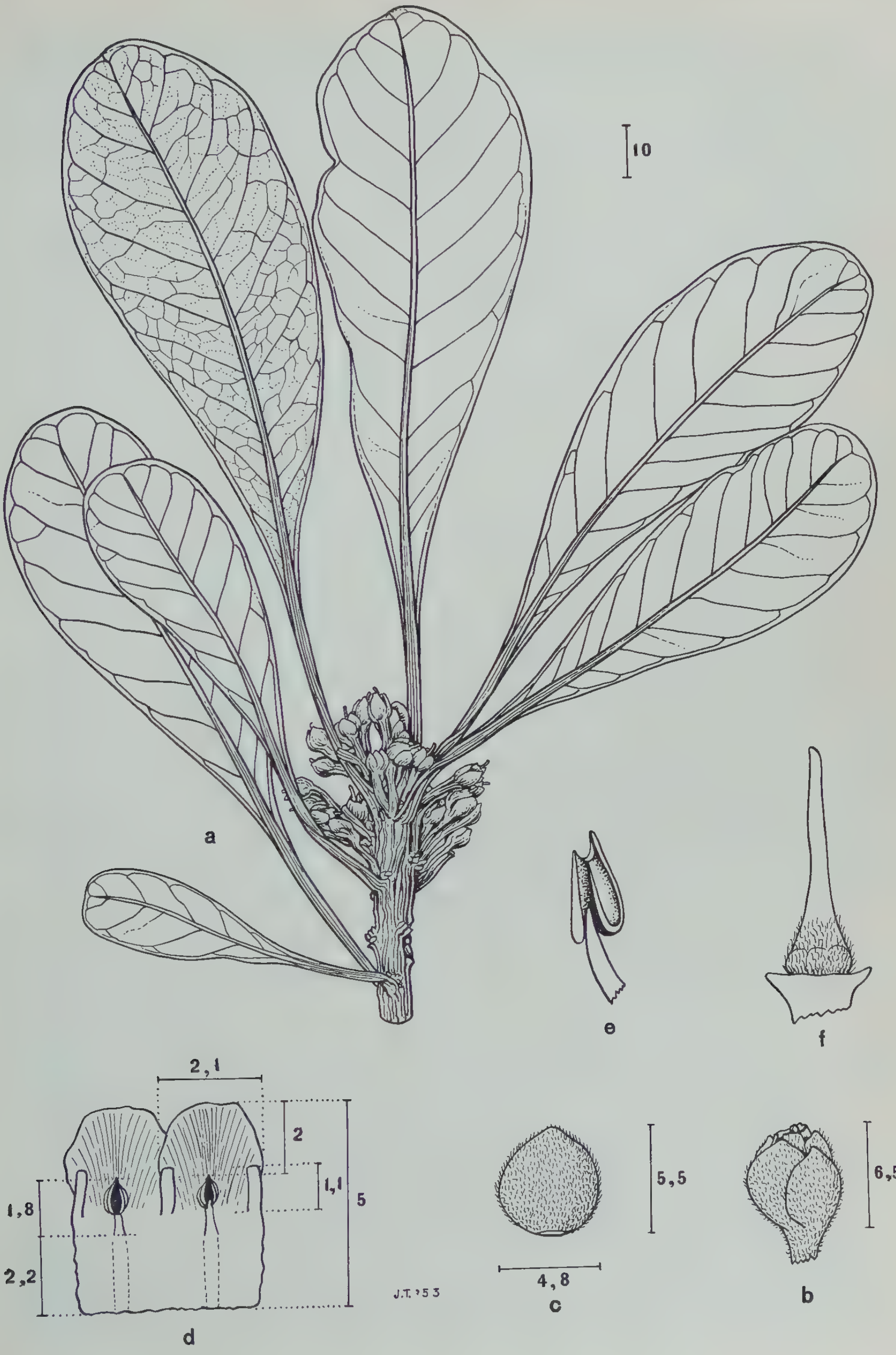
Vern. name: niaeo.

Distr.: New Caledonia.

New Caledonia. northern part of the island: *Montrouzier s.n.* (P), fl. March; without loc.: *Montrouzier 128* (P), fl.; ibidem: *Franc 1956* (Z), fl. Jan.

Remarks: Both *P. bronsmichei* and *P. dictyoneura* are closely related to the other species of this Group, but differ from these in their elongate leaves. Therefore they form a slightly different 'section' which to one side is related to *P. baillonii* and *P. contermina*, but to the other side is related to *P. rubicunda* and *P. lasiantha* of the second Group.

Fig. 16. *P. brousmichei,* a. habit, b. flowerbud, c. outer sepal, outside, d. part of corolla, inside, e. stamen, f. gynaecium. (*Montrouzier s.n.*).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b

Together they are intermediate between *P. rubicunda* and *P. contermina,* not only in the shape of the leaf but also in the tertiary nervation, which shows a tendency to a transverse position. Also the number of flowers is increasing from solitary to few-flowered clusters. In *P. brousmichei* almost always clusters of flowers are found and rarely solitary ones. In *P. rubicunda* and more markedly so in *P. lasiantha* this number is still larger.

15. P. serpentina Moore, J. Linn. Soc. 45, 1921, 352 — *Pouteria serpentina* (Moore) Baehni, 1942, 413.

Shrubs or small trees. Branchlets terete, 2—5 mm in diam., ribbed, greyish or ferruginously tomentose, glabrescent. *Leaves* conferted or slightly scattered at apex of branchlets, obovate or obovate-oblong, 7—13 by 3.5—5.5 cm, apex rounded to retuse, base narrowly cuneate; margin involute, with a stout intramarginal nerve; coriaceous, greyish tomentose and soon glabrescent above, greyish or reddish ferruginously tomentose below; midrib impressed above, sometimes minutely crested, prominent below and minutely crested, secondary nerves 8—12, ascending at an angle of 40°—50°, slightly S-shaped, archingly joined, prominulous above, prominent below, tertiary nervation laxly reticulate with one or some nerves near the margins transverse, prominulous on either side, distinct; petioles 3—12 mm long, slightly broadly grooved above, greyish or ferruginously tomentose. *Flowers* ♀ or ⚥ (?), solitary or in few-flowered clusters; pedicels angular, 1—2 mm long, ferruginously sericeous. *Sepals* ovate or orbicular, 4—4.5 by 3—4 mm, shortly obtusely acuminate or obtuse, ferruginously sericeous without, glabrous within, margin of inner sepals membranous and finely ciliate. *Corolla* greenish white, 5.5—6.5 mm, shortly exsert, lobes orbicular or oblong, c. 2 by 2 mm, apex truncate. *Stamens* 2—2.5 mm long, inserted in the middle, filaments subulate, 1—1.5 mm long, anthers ovoid-oblong, c. 1.5 cm, acute. *Staminodes* lanceolate or compressedly subulate, 1—1.5 mm, apex obtuse or acute. *Ovary* globose, c. 1 by 2 mm, 10-lobed, ferruginously or whitish tomentose; style cylindrical, tapering to the tip, c. 3.5 mm long, 5-sided, with 5 white stigmas. *Fruits* unknown.

Type specimen: *Compton 2183* in BM.

Distr.: New Caledonia.

NEW CALEDONIA. Comboui, serpentine scrub and scrubby wood, alt. c. 800 m: *Compton 2183* (BM, NSW), fl.

16. P. skottsbergii Guillaumin, Medd. Göt. Bot. Trädg. 18, 1950, 256, t. 24.

Shrubs. Branchlets subterete, 5—8 mm in diam., ferruginously or greyish woolly-tomentose, soon glabrous. *Leaves* scattered, broadly ovate or obovate, 7—13 by 5—9.5 cm, apex rounded or retuse, base broadly cuneate and subrotundate, shortly decurrent; margin waved, with a distinct intramarginal nerve; coriaceous, greyish-reddish tomentose above on midrib and secondary nerves, glabrescent, greyish-reddish tomentose below, ultimately glabrous; midrib impressed above, minutely crested, prominent below, secondary nerves 8—12, ascending at an angle of 50°—85°, straight, in the apical part of the leaf curved, prominent on either side, tertiary nervation reticulate, with one or more, often sinuous, transverse nerves near margin, prominent on either side; petioles 3—7 mm, grooved above, greyish or reddish tomentose, ultimately glabrous. *Flowers* solitary, ♀ or ⚥; pedicels angular, 2—5 mm, ferruginously sericeous. *Sepals* ovate, 5.5—7.5 by 4.5—6 mm, apex obtuse, ferruginously sericeous without, glabrous within. *Corolla* 6—7 mm, lobes obovate, 1.5—3 by 1.5—2 mm, obtusely acuminate. *Stamens* seen in bud only, c. 1.5 mm, inserted in the basal third to half, anthers ovoid, c. 1 mm, apex obtuse, dehiscing laterally. *Staminodes* subulate, c. 1 mm. *Ovary* conoid or obovoid, 2—3 by 3—4 mm, with a distinct, adnate, tomentose disk, pale ferruginously tomentose; style clavate, 3—4.5 mm, capitate. *Fruits* unknown.

Type specimen: *Skottsberg 19* in S.

Distr.: New Caledonia.

New Caledonia. Montagne des Sources, humid forest, alt. 700—800 m: *Skottsberg 19* (S), fl. Jan.; ibidem: *Hürlimann 297* (Z), shrub c. 2 m, fl. Dec.

17. **P. vieillardii** (Baillon) Dubard, 1912, 58 — *Sideroxylon vieillardii* Baillon, Bull. Soc. linn. Paris 2, 112, 1890, 886 — *Pouteria ? vieilardii* (Baillon) Baehni, 1942, 414 — *Planchonella vieillardii* (Baillon) Guillaumin, Bull. Soc. bot. Fr. 89, 1942, 222.

Trees or shrubs ? Branchlets terete, c. 5 mm in diam., ferruginously tomentose. *Leaves* subconferted at apex of branchlets, obovate to elliptic, sometimes subrhomboid, 8—10 by 3.5—5 cm, apex rounded, obtuse or shortly obtusely acuminate, base cuneate; margin involute, with an indistinct intramarginal nerve; coriaceous, sparsely whitish tomentose above, densely ferruginously or greyish tomentose-velutinous below; midrib prominulous above and densely whitish tomentose, prominent below, secondary nerves 8—12, ascending at an angle of 45°—65°, straight or curved, sometimes near margin only so, archingly joined, prominulous to impressed above, prominent below, tertiary nervation reticulate, with rather numerous transverse nerves, inconspicuous above, prominulous below; petioles 7—12 mm, canaliculate above, densely blackish, greyish or ferruginously tomentose. *Flowers* solitary or in few-flowered clusters; pedicels stout, terete, 1—2 mm, greyish or ferruginously tomentose. *Sepals* ovate, 4—5 by 3—4 mm, obtusely acuminate at apex, densely puberulous or woolly without, glabrous within. *Corolla, stamens, staminodes* and *gynaecium* unknown. *Fruits* known immature only, obovoid to subglobose, up to 1 by 0.6 cm, densely ferruginously puberulous, 2-seeded, pericarp ligneous; seeds with a narrow, linear scar, albumen copious, cotyledons foliaceous, radicle cylindrical, 1—2 mm, obtuse, exsert.

Type specimen: *Vieillard 2889* in P.

Distr.: New Caledonia.

New Caledonia. Gatope: *Vieillard 2889* (K, L, P), fl., juv. fr.

Remarks: In the shape of the leaves, the tertiary nervation and the details of the sepals this species undoubtedly belongs to Group 1. The tertiary nervation is reticulate but as more nerves than in the preceding species are transverse, *P. vieillardii* might be regarded as an intermediate species to the next group of species.

18. P. euphlebia (F. v. M.) Francis, Austr. Rainf. Trees, ed. 2, 1951, 448 — *Sideroxylon euphlebium* F. v. M., Census, 1882, 92 — *Sersalisia euphlebia* (F. v. M.) Domin, Bibl. Bot. 89, 1928, 1062 — *Pouteria euphlebia* (F. v. M.) Baehni, 1942, 335 — *Fig. 17.*

Trees. Branchlets angular, 2—6 mm in diam., apex dark brown-ferruginously tomentose, glabrescent. *Leaves* conferted at apex of branchlets, narrowly obovate or subelliptic, 5—14 by 2.5—4.5 cm, apex shortly obtusely acuminate (acumen 0.5—7 mm), base tapering into petiole; with a distinct intramarginal nerve; coriaceous, glabrous on either side, or ferruginously sericeous below, mainly along the midrib, nitidous above, dull below; midrib flat above, angular below, secondary nerves 6—9, ascending at an angle of 45°—50°, straight or subsinuous, archingly joined, prominent on either side, tertiary nervation stout, reticulate with a few nerves transverse, which are almost parallel to the secondary nerves, prominent on either side; petioles 1.5—2.5 cm, gradually widening into limb, flat above or very minutely crested, ferruginously sericeous. *Flowers* solitary or in few-flowered clusters; pedicels angular, 2—4 mm, ferruginously sericeous. *Sepals* broadly ovate, 2.5—3.5 by 2—2.5 mm, apex apiculate, ferruginously sericeous without, glabrous within, inner sepals with membranous margins; sepals in fruit suborbicular, up to 4 by 3.5 mm. *Corolla* seen in bud only, 2.5—3 mm, lobes ovate, c. 1.5 by 1 mm, apex obtuse. *Stamens* c. 1.5 mm, inserted in the lower fifth, filaments subulate, c. 1 mm, anthers ovoid, c. 0.8 mm, apex obtuse, mucronate, dehiscing laterally. *Staminodes* lanceolate or linear, c. 1 mm, apex acute or obtuse. *Ovary* obovoid, c. 1 by 2 mm, truncate, ferruginously tomentose, at base with a 10-lobed, adnate, ferruginously tomentose disk; style clavate, c. 1.5 mm. *Fruits* fusiform, ovoid or globose, often oblique, 1.5—3.5 by 1—2.5 cm, often grooved, 1—4-seeded, apex obtuse or acuminate, sometimes with a short remnant of the style which is sunk into the top of the fruit, pericarp fleshy, rather durable but thin, brownish to reddish ferruginously sericeous; seeds fusiform or obliquely ellipsoid, 1.5—2 by 0.6—1 by 0.6—0.8 cm, apex one-tipped and subacute, or 2-tipped with one of the tips often falcate and acute, the other obtuse, brown, nitidous, testa hard, woody, scar as long as the seed, 2—3 mm wide, radicle conoid, 2.5—3.5 mm, acute, exsert.

Type specimen: *Dallachy s.n.* in MEL.

Distr.: Australia.

Var. **euphlebia** — *Pouteria euphlebia* (F. v. M.) Baehni, var. *typica* Baehni, 1942, 335.

Tertiary nerves distinctly prominent above.

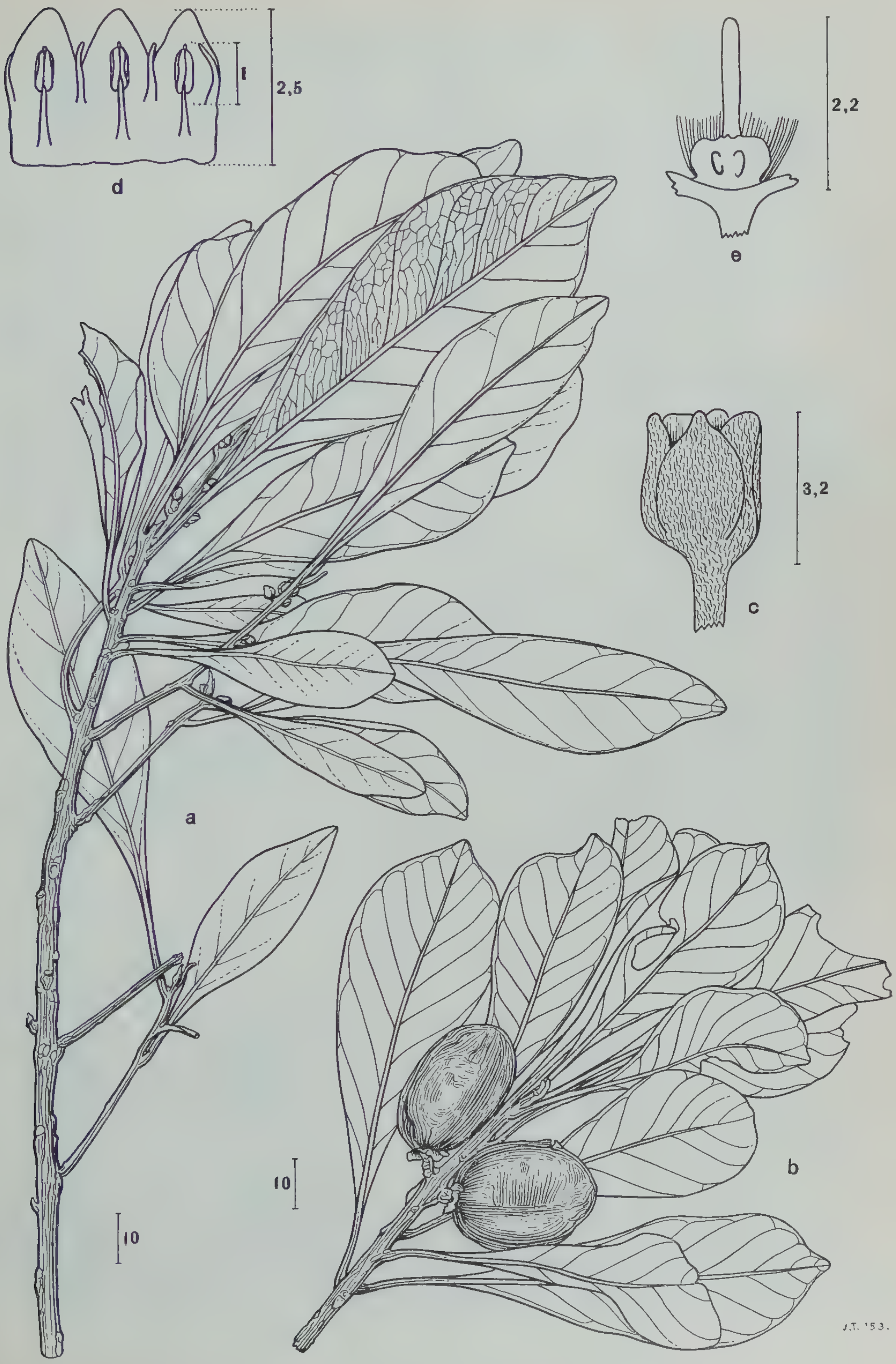
Type specimen: *Dallachy s.n.* in MEL.

Vern. name: candlewood.

Distr.: Australia.

AUSTRALIA. Queensland, Rockingham Bay: *Dallachy s.n.* (BM, BRI, MEL), fr.; Mt Spec: *Francis s.n.* (BRI), fr., Nov.; Cloudy Creek, Range Townsville to Ingham: *Arnold B* (BRI), fr.

Fig. 17. *P. euphlebia,* var. *euphlebia,* b. branchlet with fruits. (*Francis s.n.*); var. *cryptophlebia*, a. habit, c. calyx, d. part of corolla, inside, e. longitudinal section of gynaecium. (*White 10655*).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Var. **cryptophlebia** (White) van Royen, nov. comb. — *Sideroxylon euphlebium* F. v. M., var. *cryptophlebium* White, Contr. Qld Fl. 6 in Proc. Roy. Soc. Qld 50, 11, 1939, 81 — *Pouteria euphlebia* (F. v. M.) Baehni, var. *cryptophlebia* (White) Baehni, 1942, 335.

Tertiary nerves impressed or very slightly prominulous above.

Type specimen: *White 10655* in BRI.

Distr.: Australia.

AUSTRALIA. Queensland, Mt Spurgeon, dry rainforest, on hillsides: *White 10655* (A, BM, BRI), medium tree, fl. Sept.

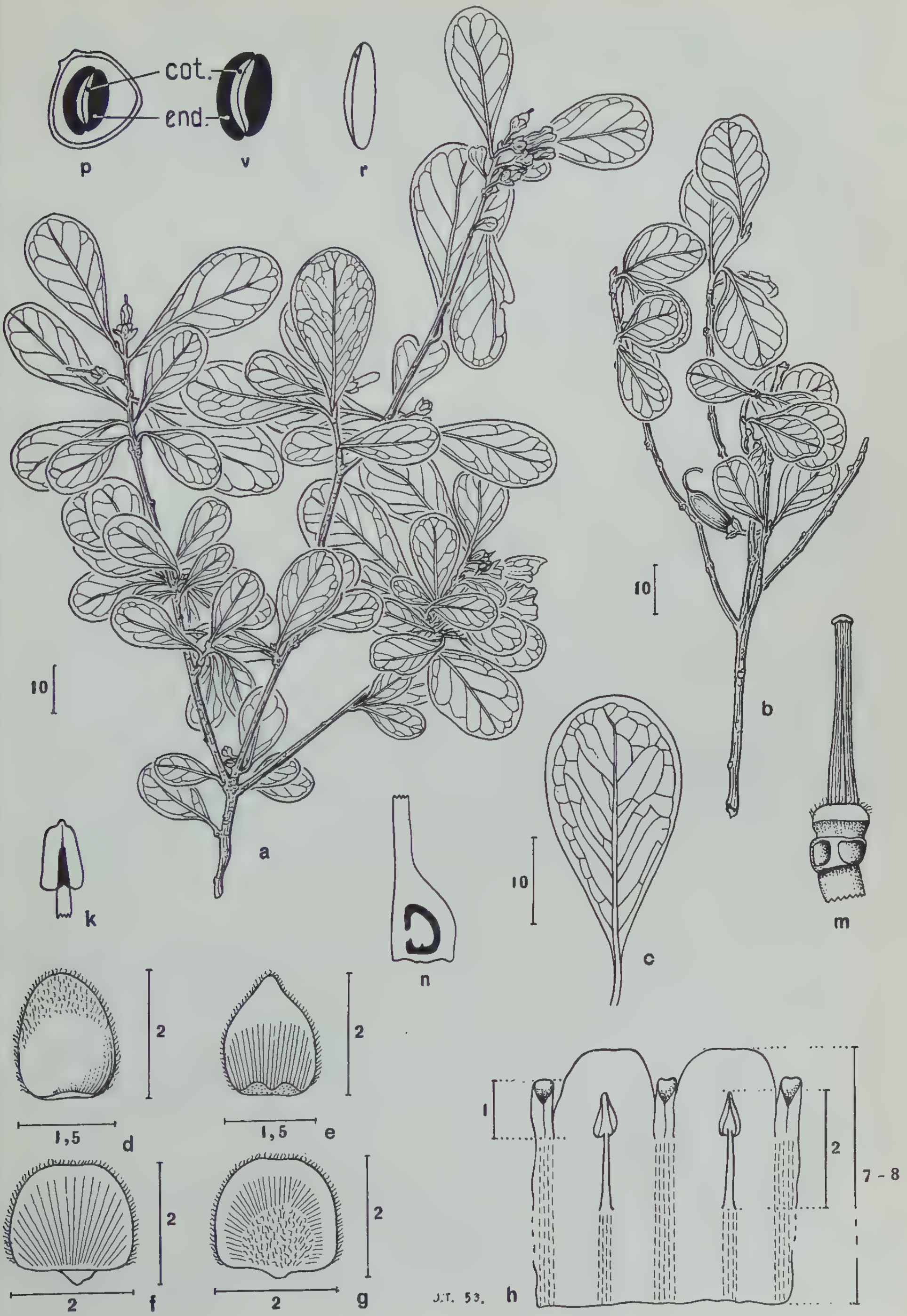
Remarks: When more material is available the two varieties might probably be united.

Group 2.

19. P. cotinifolia (A. DC) Dubard, 1912, 56; Francis, Austr. Rainf. Trees, ed. 2, 1951, 358 — *Hormogyne cotinifolia* A. DC, Prodr. 8, 1844, 176 — *Sideroxylon cotinifolium* Engler, Nat. Pfl. Fam., Nachtr. 1, 1897, 276 — *Sersalisia cotinifolia* (A. DC) F. v. M., in Domin, Bibl. Bot. 89, 1928, 1063 — *Pouteria cotinifolia* (A. DC) Baehni, 1942, 377.

Small trees or shrubs, 2—10 m. Branchlets terete, c. 1 mm in diam., sparsely ferruginously pilose or sericeous, glabrescent. *Leaves* scattered, obovate, orbicular, elliptic or spatulate, 0.4—5 by 0.3—3.8 cm, apex rounded, obtuse, or very shortly obtusely acuminate, base attenuate, tapering into petiole; with a narrow intramarginal nerve; chartaceous, young leaves sometimes whitish or yellowish puberulous on either side, but soon glabrous, or with a few scattered adpressed hairs; in var. *pubescens* lower surface in mature leaves yellowish puberulous and sparsely whitish puberulous above; the glabrescent leaves nitidous on either side; midrib prominent on either side, sometimes prominulous and flat above, secondary nerves 3—6, ascending at an angle of 40°—55°, straight, irregularly archingly joined, prominent on either side, tertiary nervation laxly reticulate, prominulous on either side; petioles terete, 0.5—2 mm, adpressedly tomentose. *Flowers* greenish to yellowish, solitary or in 2—5-flowered clusters; pedicels terete, 2—5 mm, greyish adpressedly tomentose. *Sepals* green, outer ones broadly ovate, 1.5—2.5 by c. 2 mm, shortly obtusely acuminate, adpressedly tomentose without, with brown hairs at the tip, glabrous within, inner sepals broadly ovate, c. 2 by 2 mm, adpressedly tomentose without, fimbriate along margin, glabrous within. *Corolla* greenish white with darker green lobes, 7—8 mm long, lobes orbicular or ovate, c. 2 by 2 mm, subtruncate or rounded at apex. *Stamens* 2—2.5 mm, inserted in the upper half, filaments subulate, c. 1.5 mm long, anthers ovoid-deltoid, c. 1 mm long, mucronate at apex, dehiscing introrsely. *Staminodes* pyramidal-oblong, c. 1 mm long, apex obliquely truncate and subinfundibuliform. *Ovary* obovoid or conoid, 1—1.5 mm high and in diam., tapering into the style, 5-lobed, apex glabrous or yellowish pilose, disk 10-lobed, free or adnate;

Fig. 18. *P. cotinifolia*, var. *cotinifolia*, a. branchlets with flowers, b. branchlet with fruit, c. leaf, d. outer sepal, outside, e. idem, inside, f. inner sepal, outside, g. idem, inside, h. part of corolla, inside, k. anther, m. gynaecium, n. longitudinal section of gynaecium, p. transverse section of seed, v. idem of embryo, r. seed. (*Grove 108*).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style conical, 6—8 mm long, 5-ribbed at base. *Fruits* green to black, ellipsoid-ovoid, 1—1.5 by 0.5—0.7 cm, apex with a 3—7 mm long remnant of the style, 1—4-seeded, glabrous except for a white ring of hairs at base of style and fruit; seeds ellipsoid, often compressed at one side, c. 1 by 0.4 cm, yellowish, nitidous, cotyledons foliaceous, radicle cylindrical, 0.5—1 mm, obtuse, slightly exsert. Pedicel of fruit 4—8 mm long.

Type specimen: *Cunningham s.n.* in G.

Distr.: Australia.

Var. **cotinifolia** — *Fig. 18.*

Mature leaves glabrous. Pedicels and sepals glabrous at outside. Ovary glabrous. Fruits always 1-seeded.

Type specimen: *Cunningham s.n.* in G.

Vern. names: yellow lemon (New South Wales); myrtle (Queensland).

Distr.: Australia.

AUSTRALIA. Queensland, Moreton distr., Rosewood, in remnant of monsoon forest on blackish crumby soil, alt. c. 130 m: *Blake 14814* (BRI, L), tree 6 m, fl. Febr., with very faint jasmine scent; ibidem, in remnant of bigelow-dominant forest, alt. c. 60 m; *Blake 14815* (BRI, L), tree c. 6 m, fl. Febr.; ibidem, in bigelow-hoop pine forest, alt. c. 130 m: *Blake 14816* (BRI), tree c. 3 m, fl. Febr.; ibidem, in monsoon forest on hillside, alt. c. 110 m: *Blake 14817* (BRI), tree c. 6 m; ibidem, in monsoon forest, alt. c. 110 m: *Blake 14945* (BRI), fr. shining black, May; ibidem: *Blake 14946* (BRI), fl. May; ibidem, in monsoonforest on hillside, alt. c. 120 m: *Blake 14818* (BRI, L), tree c. 6 m, fl. Febr.; ibidem: *Bailey s.n.* (BRI), fl.; Cornanga North: *White 2488* (BRI), tree c. 10 m, fl. April; Acacia Creek near Killarney, on ridges of water course and in moist places: *Boorman 30* (NSW), small undershrub of 4—8 m, fl. Febr.; ibidem: *Boorman s.n.* (NSW), fl. March; Laidley: *King s.n.* (NSW); Killarney: *Boorman 115* (BM, NSW), fl. & fr. Febr.; Springsure: *Bick s.n.* (NSW), fl. June; Marburg Range, in dryish rainforest remnant on slopes: *L. S. Smith & Weld 3697* (BRI), tree c. 6 m; Burnett district, Kingaroy: *L. S. Smith 3106 & 3106 A* (BRI), small rather twiggy tree, c. 3—5 m; ibidem, Dallarnil, low scrub along a gulley: *L. S. Smith 659* (BRI), small tree, fl. Dec.; Bundaberg, 'Old Gardens': *Gay & L. S. Smith 636* (BRI), fl. Jan.; Nanango: *Grove 108* (BRI), fr. May; Widgee, near Gympil: *Pryor 22* (BRI); Imbil: *Frash s.n.* (BRI); Kalpower, rainforest: *Floyd s.n.* (LAE), small tree; without loc.: *Perry 831* (BRI) — New South Wales, Acacia Creek: *Dunn 133* (NSW), fl. March; New England distr., in dry rainforest: *King s.n.* (NSW), fr.; Logan's Vale, dividing range at Encampment, in shaded woods: *Cunningham 17* (BM), fl.; Endeavour river: *Cunningham s.n.* (K).

Remarks: According to Guillaumin, Bull. Soc. bot. Fr. 91, 1944, 71, this species is also found on New Caledonia. This statement is based on Däniker, Vierteljahrsschr. Nat. Ges. Zürich 78, 1933, 352. The specimens included, however, belong to *P. cinerea.*

Var. **pubescens** van Royen, nov. var. — *Pag. 428.*

Mature leaves yellowish woolly-puberulous below and sparsely whitish pubescent above. Pedicels and sepals yellowish woolly without. Ovary yellowish pilose. Fruits 1—4-seeded.

Type specimen: *White 12462* in L.

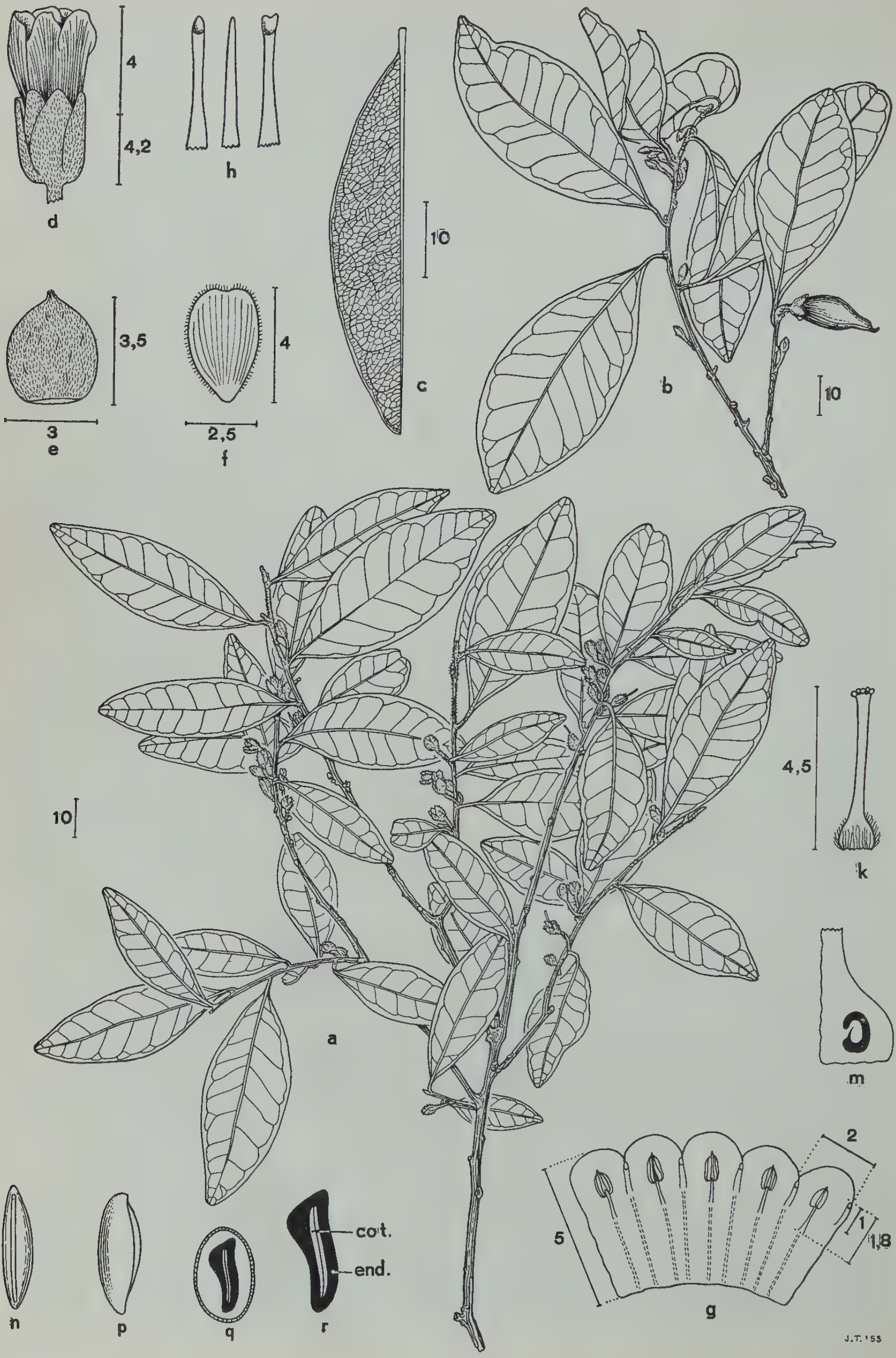
Distr.: Australia.

AUSTRALIA. Queensland, Leichhardt distr., Duaringa, mixed softwood forest: *White 12462* (BRI, L), tree 8—10 m, fl. Nov.; ibidem, Wandoan: *Webb & White 1129* (BRI, L), tree c. 8 m, fl. June; Tea Tree Mine, Chittagoe: *Flechner 7187* (BRI), fl. Jan.; Port Curtis distr., near Rockhampton, monsoon forest: *Blake 14842* (BRI), corolla greenish, immature fr. green, March; ibidem, Marmor, alt. 30—60 m, in monsoon forest: *Blake 14821* (BRI), tree c. 6 m, fl. greenish to yellowish, March; ibidem, Bilula, in monsoon forest: *Blake 15359* (BRI), crooked tree up to 6 m, immature fr. green, Sept.; ibidem, Ogmore, alt. c. 20 m, in monsoon forest: *Blake 15313* (BRI), tree 6—10 m, fr. black, Sept.; ibidem: *Clemens s.n.* (BRI), fl. Dec.; Rockhampton: *Bailey 266* (BRI), fl.; ibidem, Wood End: *Francis s.n.* (BRI), fl. March; Marmor, near Rockhampton: *Francis s.n.* (BRI, SING), fl. March; North Kennedy distr., Barrabas Scrub, W. of Ravenwood, alt. c. 300 m, monsoon forest on coarse whitish sand: *Blake 14890* (BRI), straggling tree-shrub, 3—10 m, fl. & fr. April; ibidem, Sellheim, c. 280 m alt., monsoon forest on red sandy soil: *Blake 15305* (BRI), shrubby tree, 6—10 m, fr. black, Sept., Eidsvold: *Bancroft s.n.* (BRI), fl. April; Greycliffe, Callide Valley, light rain forest: *White 10852* (BRI), fl. April; Mitchil distr., Enniskillen, sandy soil, high rainforest: *White 12368* (BRI), small tree, fl. Nov.; Springsure: *Bick s.n.* (BRI), fl. June; Cook distr., Lynd Scrub, near headwaters of Lynd river, c. 65 km SSW of Mt Garnet, on a patch of red soil carrying stunted dry rainforest: *L. S. Smith 3874* (BRI, L), tree c. 6 m, fr. Aug.

Remarks: The fruit has been described from *L. S. Smith 3874* in BRI. In this specimen the fruits are 2—4-seeded and the scars are shorter than the seeds, probably owing to the larger number of seeds.

20. **P. myrsinoides** (Cunn.) Blake in Francis, Austr. Rainf. Trees, ed. 2, 1951, 358 — *Achras myrsinoides* Cunn. in Bentham, Fl. Austr. 4, 1869, 283 — *Sersalisia myrsinoides* (Cunn.) Domin, Bibl. Bot. 89, 1928, 1062 — *Pouteria myrsinoides* (Cunn.) Baehni, 1942, 303 — *Planchonella howeana* (F. v. M.) Pierre, Not. bot. Sapot., 1890, 36; Dubard, 1912, 55 — *Achras howeana* F. v. M., Fragm. 9, 1875, 72 — *Sersalisia howeana* (F. v. M.) Domin, l. c., 1062 — *Pouteria howeana* (F. v. M.) Baehni, 1942, 306 — *Fig. 19.*

Trees or shrubs, 2—10 m. Branchlets slender, 2—3 mm in diam., angular, blackish, greyish or ferruginously puberulous to adpressed tomentose, glabrescent. *Leaves* scattered, ovate-oblong, elliptic to obovate, sometimes slightly rhomboid, 2—10 by 0.8—5 cm, apex obtuse and entire, or retuse, sometimes broad and short obtusely acuminate, acumen 3—7 mm long, base cuneate, attenuate into a membranous petiole; with a narrow intramarginal nerve; chartaceous-coriaceous, juvenile leaves yellowish ferruginously, black, or whitish woolly above and along basal part of the midrib, yellowish, blackish or whitish tomentose below, mature ones glabrous on either side, nitidous above, nitidulous below; midrib prominent on either side, secondary nerves 6—10, sometimes apparently up to 18 by a part of the tertiary nerves, ascending at an angle of 55°—75°, straight, forked at tips and irregular archingly joined, prominent on either side, tertiary nervation laxly reticulate, sometimes one nerve more distinctly developed between two secondary nerves and subparallel to the latter, prominent on either side; petioles 3—8 mm long, subcanaliculate above, blackish, yellowish, whitish or ferruginously tomentose, glabrescent. *Flowers* solitary or in few-flowered clusters; pedicels terete, 4—14 mm long, ferruginously, yellowish, blackish or whitish sericeous or woolle. *Sepals* 4 or 5, outer ones suborbicular or narrowly ovate, 3.5—6 by 3—4 mm, apex obtuse to mucronulate, yellowish sericeous without, apex sometimes with darker hairs, fimbriate along margin, glabrous within. *Corolla* 5—11 mm, lobes suborbicular to ovate, 1.5—4 by 2—3 mm, rounded at apex, sometimes truncate. *Stamens* 1—4 mm, inserted in the upper half to third, filaments 0.5—3 mm, anthers ovoid, 1—2 mm, apex obtuse, mucronulate, dehiscing laterally. *Staminodes* lanceolate to linear, 1—2.5 mm, apex sometimes flat and widen-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ed, or emarginate and obliquely truncate, flat or conchate at one side. *Ovary* subglobose, 0.5—2 mm in diam., densely tomentose; style conoid, 4—8 mm long. *Fruits* obliquely fusiform to ovoid, 1.5—3 by 0.6—2.5 cm, apex with a curved, elongate, 5—10 mm long style, 1—3-seeded, whitish puberulous, glabrescent, except whitish sericeous at base of style, blackish, pericarp thin or thick, fleshy; seeds ellipsoid or obovoid, sometimes oblique, 1.2—2.2 by 0.4—1.1 by 0.2—0.8 cm, brownish, subacute at either end, nitidous, sometimes lighter coloured towards the scar, the latter linear, nearly as long as seed, 0.7—3 mm wide, albumen copious, cotyledons foliaceous, radicle conoid, 1.5—2 mm, acute, exsert.

Type specimen: *Cunningham 123* in K.

Vern. names: axe-handle wood, axe-handle.

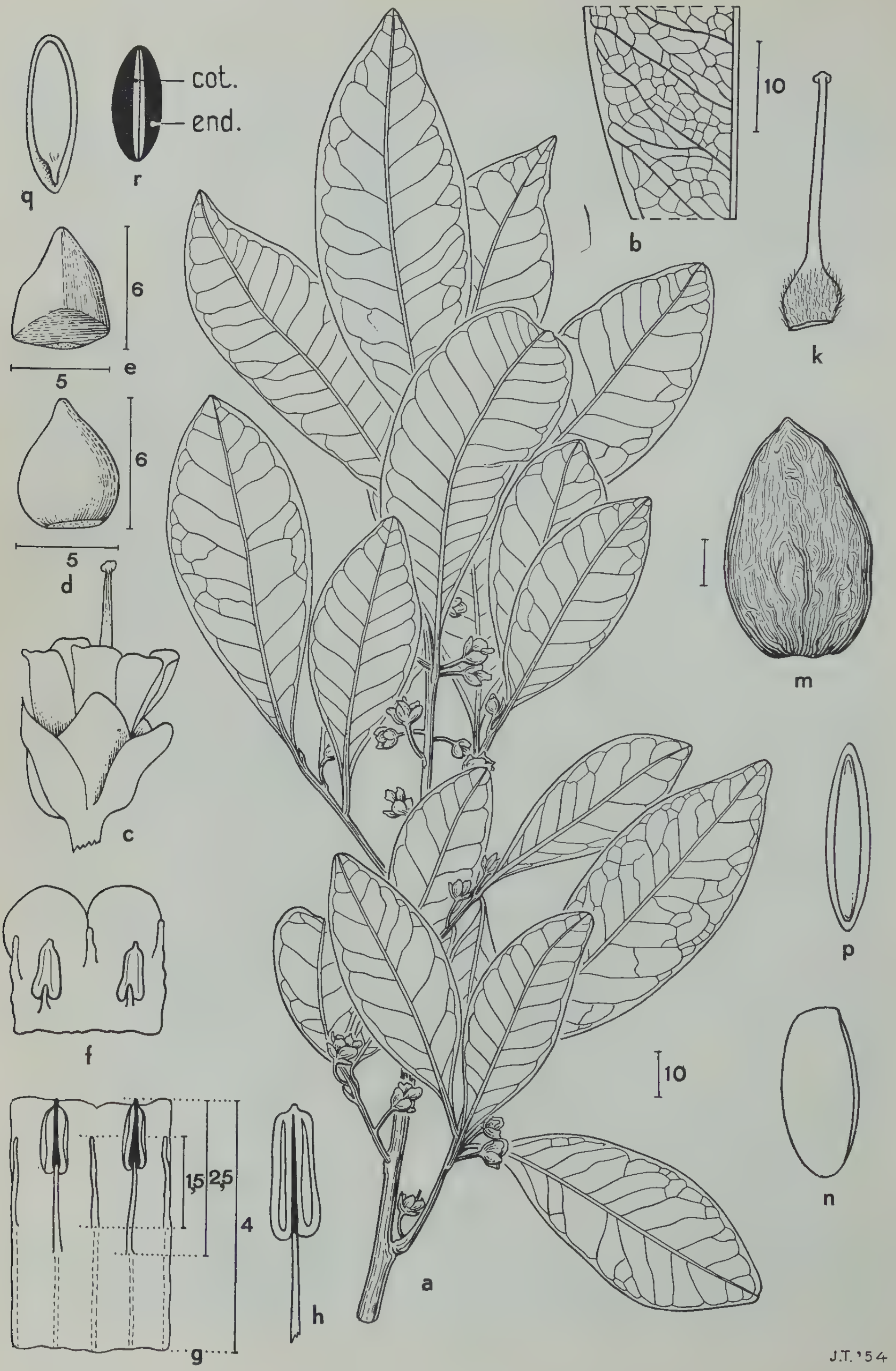
Distr.: Australia and Lord Howe Island.

Australia. Northern Australia: Rodd's Bay: *Cunningham 123* (K), fl. May — Queensland, Wide Bay distr., The Hummock, c. 8 km E of Bundaberg, alt. c. 30 m, in rainforest: *L. S. Smith 4103* (BRI, L), small tree, fl. & fr. Oct.; Kolan river, at Smith's Crossing NW of Bundaberg, in riverine rainforest: *L. S. Smith 4149 B* (BRI), small tree, fl. Oct.; near Imbil, alt. c. 150 m, rain forest: *L. S. Smith & Webb 3133* (BRI), small tree c. 6 m, fl. & fr.; Baffle Creek, N. of Bundaberg: *White s.n.* (BRI, NSW), fl. buds April; Gundiah: *White 3521* (BRI, SING), fl. June; Rosedal, Sheep Station Creek: *Dovey 677* (BRI), small tree c. 6 m, fl. & fr.; Goodman Scrub: *White s.n.* (BRI), fl. June; Yarraman: *Cameron 425* (BRI), small tree, fl. July; Brisbane river, below Breakfast Creek: *Bailey s.n.* (BRI), fl. June; Benarkin, c. 100 km NW from Brisbane: *Bick & Francis s.n.* (SING), fl. May; Mt Perry: *Keys 4* (BRI), fl.; ibidem: *Boorman s.n.* (NSW), fl. Aug.; *Moreton Distr.*, One Tree Hill, Brisbane, in remnant of scrub: *Blake & Everist 3271* (BRI), shrub, fl. Febr.; Petrie Sidling Creek, river forest: *Blake 2320* (BRI), fl. March; Moreton Bay: *von Mueller s.n.* (NSW), fl.; ibidem: *Fraser 56, 90, 114* (BM), fl.; Goodna, rain forest: *Blake 3329* (BRI), small shrub, April; Mt Lindsay, border N.S.W. and Qld, rainforest around base of mountain: *White 12741* (BRI), small tree, fl. March; Yananan: *Clemens s.n.* (BRI), fl. Aug.; ibidem: *Rankin s.n.* (BRI), fl. Aug.; Woogaroo Creek: *White s.n.* (BRI), fl. Nov.; Biggenden Burnett Distr.: *White 7273* (BRI), fl. Oct.; Gallangowan: *Swain s.n.* (BRI), March; Brisbane river, small creek near farm: *Bailey s.n.* (BRI); Gympie: *Kenny s.n.* (BRI), fl. — New South Wales, Sydney Botanical Garden: *Chittendal 18241* (NSW), fr. Aug.; Brisbane river, in close dry woods: *Cunningham 55* (K), a slender twiggy shrub, fl. Sept.; Coffs Harbour: *Boorman s.n.* (NSW), fl. buds Aug.; ibidem: *Boorman s.n.* (NSW), fl. Sept.; Breakfast Creek, near Brisbane: *Bailey s.n.* (NSW), fl. Aug.; Casino: *Mc Auliffe 4357/13* (NSW), fl. July; ibidem: *Mc Auliffe 5813/13* (NSW), tree up to 10 m, fr. Aug.; ibidem: *Mc Auliffe 6466/13* (NSW), fr. Sept.; ibidem: *Maiden s.n.* (NSW), fr. April; ibidem: *Mc Cormick 99* (NSW), fr. Nov.; Lismore: *Bauerlein 893* (NSW), tree 6—8 m, fl. Sept.; ibidem: *Rothwell s.n.* (NSW), fl. Aug.

Lord Howe Isl. without loc.: *Fullagan s.n.* (BM, K), juv. fl. & fr.; ibidem: *King s.n.* (BRI, NSW), fl. July; ibidem: *Boorman s.n.* (NSW), large shrubs or small tree 2—4 m, fl. May, fairly common along the foreshores on the western side; ibidem: *Hedley & Dunn s.n.* (NSW), fl. Sept.; ibidem: *von Mueller 8549* (MEL), fl.

21. P. australis (R. Br.) Pierre, Not. bot. Sapot., 1890, 36 — *Achras australis* R. Br., Prodr., 530 — *Sersalisia australis* (R. Br.) Domin, Bibl.

Fig. 19. *P. myrsinoides,* a. branchlets with flowers, b. branchlet with flowers and fruit, c. part of leaf from below, d. flower, e. outer sepal, outside, f. inner sepal, inside, g. part of corolla, inside, h. staminodes, k. gynaecium, m. longitudinal section of ovary, n–p. seed, q. transverse section of seed, r. idem, of embryo only. (a. from *Rankin s.n.,* b. from *Smith & Webb, 3133,* d–r. from *Rankin s.n.*).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J.T. '54

Bot. 89, 1928, 1062 — *Pouteria australis* (R. Br.) Baehni, 1942, 308 — *Fig. 20.*

Trees, up to 45 m. Branchlets subterete to angular, 2—5 mm in diam., sparsely whitish hairy, glabrescent, often distinctly lenticellate. *Leaves* scattered or subconferted at apex of branchlets, obovate, ovate or elliptic, or oblong, 6—16 by 2—6 cm, apex rounded, obtuse, acute or obtusely or acutely acuminate, acumen up to 12 mm long, sometimes shortly apiculate, base cuneate, decurrent; with a narrow intramarginal nerve; chartaceous or coriaceous, glabrous and nitidous on either side; midrib prominulous above, prominent below, secondary nerves 10—13, ascending at an angle of (50°—)55°—75°, straight or slightly sinuous, irregularly archingly joined, prominent on either side, tertiary nervation laxly reticulate, prominulous on either side, sometimes one nerve between two secondary nerves more distinct and parallel to the latter, recurved near midrib; petioles 2—15 mm long, flat above, rounded below, indistinctly marked from the limb, glabrous. *Flowers* in few-flowered clusters or solitary, axillary or very rarely in clusters along a leafless or almost leafless axillary shoot; pedicels angular, 8—15 mm long, whitish sericeous. *Sepals* broadly ovate to triangular, 3.5—5 by 3.5—5 mm, apex acute or obtuse, whitish or ferruginously puberulous to sericeous on either side, outer sepals sometimes glabrous or subglabrous without, margins ciliate. *Corolla* 3—5 mm long, lobes suborbicular or broadly ellipsoid, 2—3 by 2.5—3.5 mm, apex subtruncate or rounded. *Stamens* 2—3 mm long, inserted in the lower third to half, filaments subulate, 1—1.5 mm, anthers sagittate or ovoid, 1—1.5 mm, apex obtuse or obtusely mucronate, dehiscing laterally. *Staminodes* subulate or filiform, dorsally flat, 1—1.5 mm long, rarely apex obliquely truncate and widened. *Ovary* ovoid-conoid, 1.5—2 mm long and in diam., densely ferruginously tomentose, 5-lobed, 5-celled, disk 10-lobed, adnate to the ovary, ferruginously tomentose; style stout, cylindrical, 2—3 mm long, 5-ribbed. *Fruits* purplish or black, ovoid, ellipsoid or globose, 1—5.2 by 1—5.2 cm, apex with a remnant of the style, which is sometimes sunk into the tip of the fruit, (1—)5-seeded, juvenile ones ferruginously tomentose, mature ones glabrous, pericarp hard at first, but soon becoming fleshy; seeds ellipsoid, laterally flattened, 3—4 by c. 1.5 by c. 1 cm, apex subacute and subfalcate, base obtuse, brownish or yellowish, nitidous, scar almost as long as seed, 2—4 mm wide, albumen copious, cotyledons foliaceous, radicle subulate, 3—4 mm long, acute, exsert.

Type specimen: *Brown 2824* in K.

Vern. names: panupin plum, black apple, plum.

Use: The wood is used for reconstruction materials.

Distr.: Australia.

Australia. Queensland, Tambourine Mt: *Simmonds s.n.* (BRI), fl. Oct.; ibidem: *Longman s.n.* (K), fl. Oct.; Highland Estate, Samford: *Higgins 2* (BRI), fr.; Blackall Range: *White s.n.* (BRI, NSW), fl. Dec.; Glastenbury: *Swain s.n.* (BRI), tree, fl. buds Oct.; Moreton distr., Whiteside near Petrie, in riverforest along North Pine

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Fig. 20. *P. australis*, a. habit, b. part of leaf, c. flower, d. outer sepal, inside, e. inner sepal, inside, f. corolla in bud, inside, g. corolla, inside, h. stamen, k. gynaecium, m. fruit, n–p. seed, q. longitudinal section of embryo, r. idem, transverse. (a–p. from unknown collector in BRI, q–r. from *Brown 2824*).

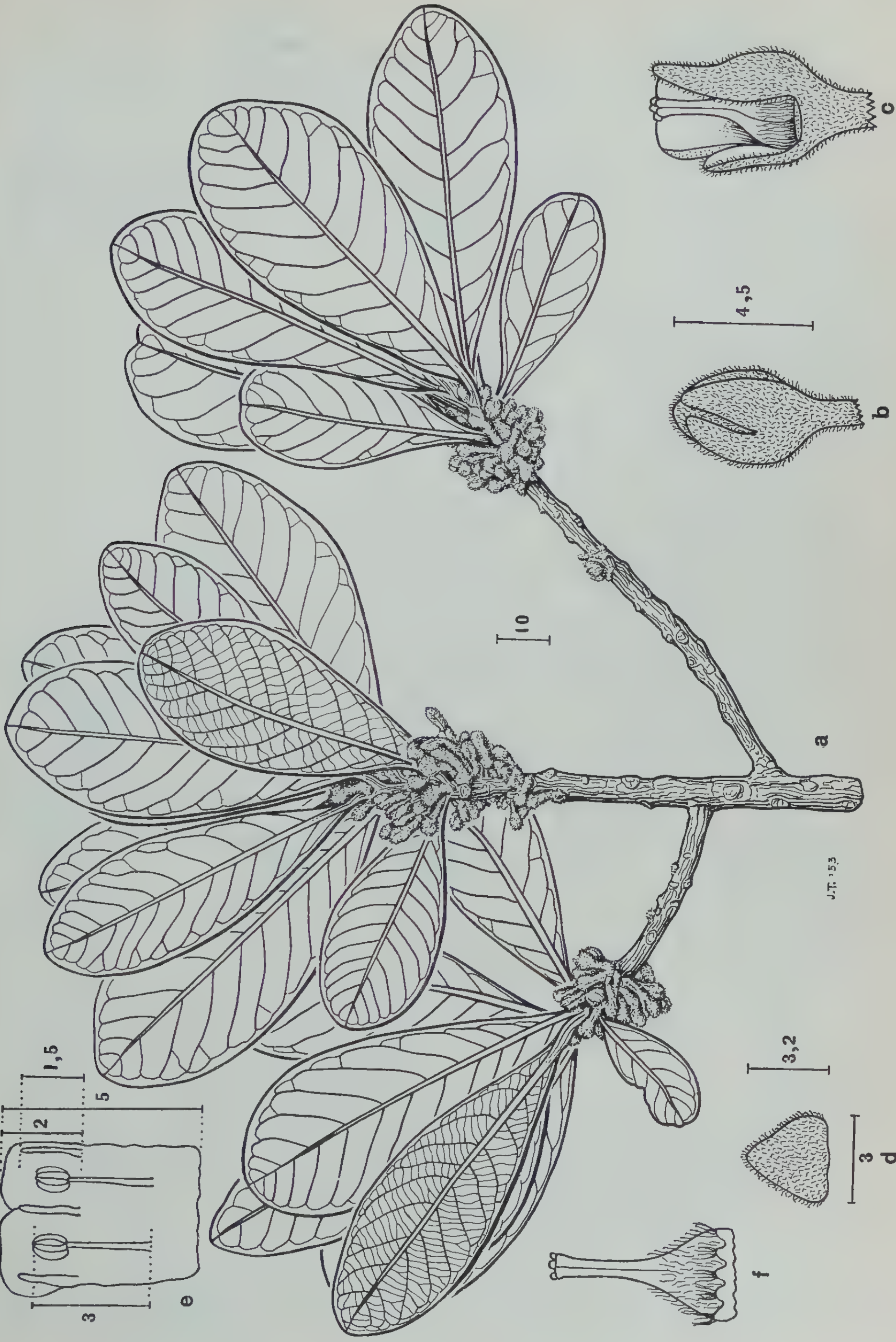
river: *Blake 3194* (BRI); Clarence river: *Beebe s.n.* (L), fr.; Springbrook, MacPherson Range, in rainforest, alt. c. 1000 m: *Hubbard 4274* (K, L), tree c. 12 m, fl. Sept., fr. purplish; ibidem, alt. c. 1000 m: *White 8223* (BM, BRI), fl. Oct.; Camerunga, Albert valley near Beaudesert: *Shirley 6813/13* (NSW), fr. Sept.; lower part of Paterson's river: *Wiliams s.n.* (BM), fl. Oct.; Port Denison: *Dallachy s.n.* (P), fl. — New South Wales: Dorigo State forest: *White 7512* (BRI), Oct.; ibidem: *Maiden s.n.* (NSW), fl. Dec.; Hunters river: *Brown s.n.* (BM, K), fl.; Illawarra and Brisbane river: *MacArthur 44* (BM, K); Stroud distr.: *Rudder 19* (NSW), fl. Febr.; Manning river: *Betche s.n.* (NSW), fl. Jan.; Rabiac distr., in rainforest: *Gilbert s.n.* (NSW); tree c. 16 m, fr. Sept.; Lismore: *Rothwell s.n.* (NSW); ibidem: *Woodburn s.n.* (NSW); ibidem: *Bauerler s.n.* (NSW); ibidem: *Bauerler 371* (NSW), fr. July; ibidem: *Woodburn c.s. s.n.* (NSW), fl. & fr. Nov.; Kyogle: *McLean 8146/17* (NSW), fr. Dec.; Ourimbah State forest: *de Beuzeville s.n.* (NSW), fl. Jan.; Woolgoola: *de Beuzeville 770* (NSW); Richmond river: *Fawcett s.n.* (NSW), fl.; Casino: *McAuliffe 5813/13* (L, NSW), fr. Aug.; Mummulgum near Casino: *Cleland s.n.* (NSW), fl. Nov.; National Park: *Hagman s.n.* (NSW), fl. Dec.; Hunter river, Ash Isl.: *Maiden s.n.* (NSW), fl. buds Oct.; Clarence river: *Bechler (?) s.n.* (NSW), fr.; ibidem: *v. Mueller s.n.* (P), fl. & fr.; Whian State forest: *de Beuzeville 668* (NSW), juv. fr., March; Port Macquarie: *Maiden s.n.* (NSW), fl. Nov.; Coff's Harbour: *Duard s.n.* (NSW), July; Alstonville distr.: *Tomlin s.n.* (NSW), fl.; county of Buller, west of Acacia Creek, Mandle and Beaury State Forest II: *Blandford s.n.* (NSW), fl. July; Williams river: *Fraser & Vickery s.n.* (NSW), fl. Jan. — without known loc.: *Brown 2824* (BM, K), fl.; *Schotzky 925* (BM, P), fr.

Remarks: Sometimes the flowers are borne in clusters along a leafless or almost leafless axillary shoot, e. g. in *Simmonds s.n.* in BRI. This detail, but on a larger scale, is found in Group 4.

22. P. eerwah (Bailey) van Royen, nov. comb. — *Sideroxylon eerwah* Bailey, Proc. Roy. Soc. Qld 10, 1894, 52 — *Sersalisia eerwah* (Bailey) Domin, Bibl. Bot. 89, 1928, 1063 — *Pouteria ? eerwah* (Bailey) Baehni, 1942, 408.

Small to large trees. Branchlets slender, terete to angular, 2—4 mm in diam., densely adpressedly greyish tomentose, glabrescent. *Leaves* obovate to spatulate, 4—14 by 1.2—6.5 cm, apex obtuse or short obtusely acuminate, base tapering into petiole; with a narrow intramarginal nerve; papyraceous or coriaceous, glabrous on either side, nitidous above, nitidulous below; midrib prominulous above and flat, prominent below, secondary nerves 5—8, ascending at an angle of 35°—45°, straight, archingly joined, prominent on either side, tertiary nerves laxly reticulate, prominulous on either side; petioles 2—8 mm long, indistinctly marked, flat above, adpressedly tomentose below, glabrescent. *Flowers* unknown. *Fruits* obovoid, sometimes oblique, 3—4 by 2—4 by 2—4 cm, apex shortly apiculate, 2—5-seeded, glabrous except for an indistinct ring of ferruginous hairs at the base, pericarp fleshy; seeds obovoid-pyriform, sometimes oblique or laterally flattened, 2.5—3 by 1—1.8 by 1—1.5 cm, acuminate at either end, or at apex only, and the base acute, brown, nitidous, scar linear to spatulate, as long as seed, c. 3 mm wide, yellowish, dull, albumen copious, cotyledons foliaceous, radicle conoid, c. 3 mm long, acute, exsert. Pedicel of fruit stout, c. 1 cm long, glabrous. Calyx in fruit glabrous at outside, ferruginously sericeous at inside.

Fig. 21. *P. dubia*, a. habit, b. bud, c. part of calyx and gynaecium, d. sepal, outside, e. part of corolla, inside, f. gynaecium. (a–d. from *Balansa 1322*, e–f. from *Guillaumin & Baumann 9072*).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Type specimen: *Field Naturalists s.n.* in BRI.
Distr.: Australia.

AUSTRALIA. Queensland, Mt Eerwah, *Field Naturalists s.n.* (BRI), fr.; Eumundi distr., Mt Lamb: *Lamb s.n.* (BRI), fr. May; Garden Island: *Mitchell s.n.* (BRI), fl. Sept.

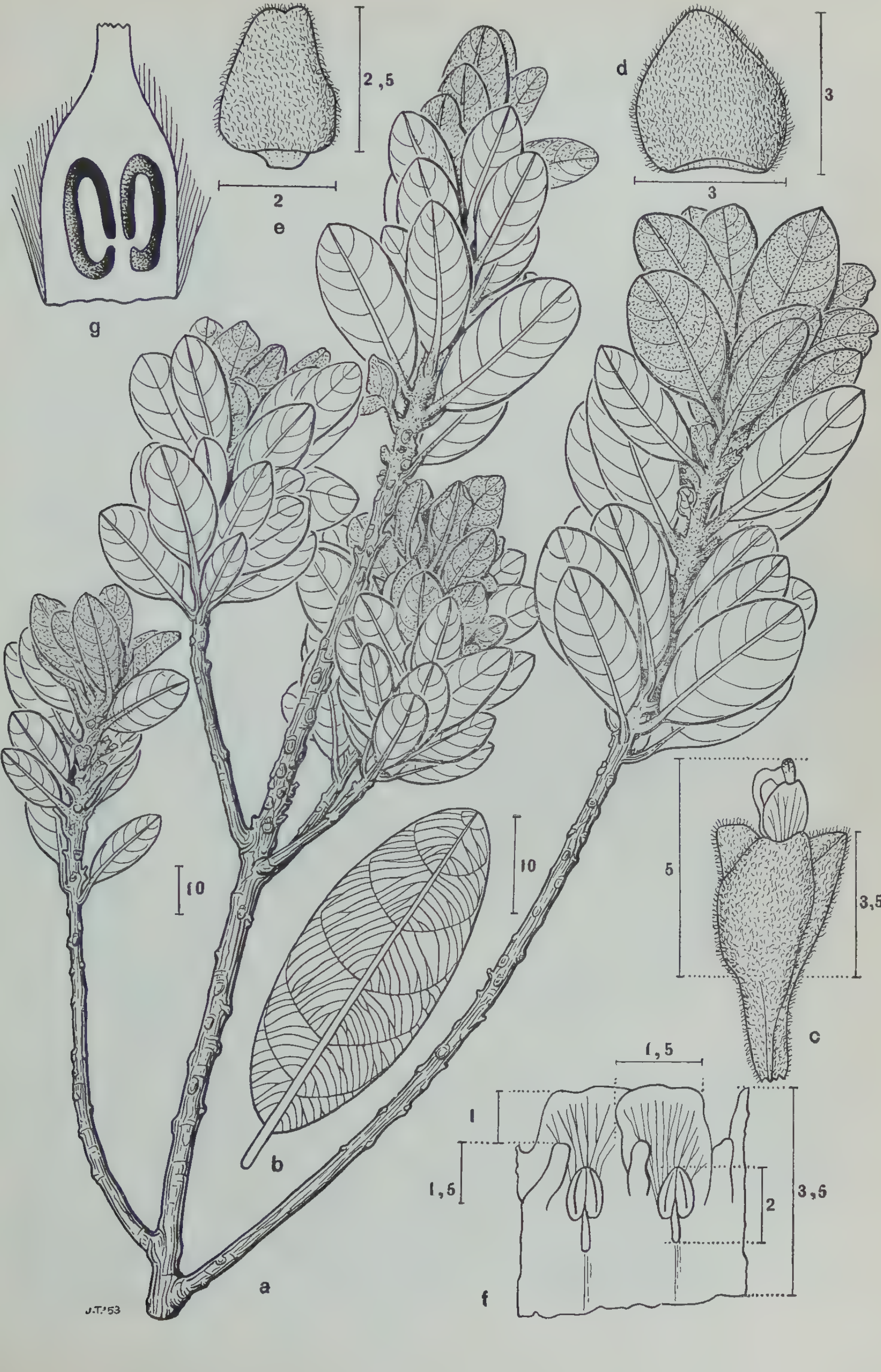
Remarks: The place of this species is uncertain as flowers are unknown. On account of its resemblance to *P. cotinifolia* and *P. myrsinoides* it has been inserted here but it might as well be possible to include it in the *P. obovata*-group (6), or in Group 1.

Group 3.

23. **P. dubia** (Pancher & Sebert) van Royen, nov. comb. — *Chrysophyllum dubium* Pancher & Sebert, Bois Nouv. Cal., 1874, 195 — *Sebertia dubia* (Pancher & Sebert) Pierre ex Guillaumin, Ann. Mus. col. Marseille 19, 1911, 188 — *Planchonella lasiantha* (Baillon) Dubard, 1912, 58 — *Sideroxylon lasianthum* Baillon, Bull. Soc. linn. Paris 2, 112, 3 Dec. 1890, 887 — *Pouteria lasiantha* (Baillon) Baehni, 1942, 324 — *Beccariella coriacea* Pierre, Not. bot. Sapot., 30 Dec. 1890, 30 — *Ochrothallus fournieri* Dubard ex Guillaumin, Bull. Soc. bot. Fr. 89, 1942, 233, *nomen nudum* — *Fig. 21.*

Trees or shrubs, 7—10 m. Branchlets terete, 2—4 mm in diam., striate, rugose, ferruginously tomentose, glabrescent. *Leaves* conferted at apex of branchlets, spatulate, obovate or obovate-oblong, 5—10 by 2—3.5 cm, apex obtuse or indistinct obtusely acuminate, base attenuate, shortly decurrent; intramarginal nerve narrow; coriaceous, glabrous above except sometimes along midrib and secondary nerves, nitidous to nitidulous, ferruginously tomentose below, glabrescent except for midrib and secondary nerves; midrib grooved and narrowly crested above, prominent below, secondary nerves 9—12, ascending at an angle of 45°—65°(—75°), curved, tips forked and archingly joined, impressed above, prominent below, tertiary nervation impressed above but inconspicuous, prominent below; petioles 3—8 mm long (according to Baehni 12—15 mm), flat above or with 2 indistinct ribs, blackish or greyish tomentose. *Flowers* solitary or clustered, mainly lower than the leaves, ♀ or ⚥; pedicel terete, 4—15 mm long, densely yellowish ferruginously tomentose. *Sepals* 5 or 6, ovate, 3—4 by 2.5—3 mm, apex obtuse, ferruginously puberulous without, ferruginously sericeous within, inner sepals smaller than the outer ones. *Corolla* 3.5—6 mm long, 4- or 5-lobed, apex of lobes subtruncate or obtuse, c. 2.5 by 2.5 mm. *Stamens* 3—3.5 mm, inserted in the middle or the basal third, filaments subulate, c. 2.5 mm long, anthers ovoid, 1—1.5 mm, obtuse at apex, dehiscing extrorsely. *Staminodes* spatulate or oblong, c. 1.5 mm long, apex obtuse or irregularly lobed. *Ovary* ovoid, 1.5—2 mm high and in diam., 4- or 5-celled, 4- or 5-lobed, pale ferruginously tomentose, disk 10-lobed, adnate to ovary, ferruginously tomentose; style stout, 1.5—2 mm long, 5-ribbed, capitate. *Fruits* unknown.

Fig. 22. *P. lanatifolia,* a. habit, b. leaf without indumentum, from below, c. flower, d. outer sepal, outside, e. inner sepal, inside, f. part of corolla, inside, g. longitudinal section of gynaecium. (*Kanehira & Hatusima 13891*).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Type specimen: *Sebert & Fournier 62* in P.
Vern. name: cornuis.
Use: Suitable timber for furniture.
Distr.: New Caledonia.

New Caledonia. Mt Mio: *Balansa 1322* (L, P), fl.; ravines of Plateau des Mines, Thio, lateritic soil: *Brousmiche 523* (P), tree 7—10 m, fl.; Prony: *Franc 1742 A* (P), fl. April; without loc.: *Sebert & Fournier 62* (BM, P), fl.; *Raout s.n.* (P); *Baumann 13999* (Z), tree 6 m, June; *Guillaumin & Baumann 8804* (Z), tree 5 m, Nov.; *9072* (Z), tree 6 m, fl. Nov.; *9084* (Z), tree 10 m, fl. Nov.

Remarks: This species is closely related to *P. vieillardii* but differs in the pubescent inner side of the calyx and in the transverse tertiary nervation, though the nerves of this nervation are often connected and sometimes give the impression of a reticulate nervation as is found in *P. vieillardii.*

24. P.? lanatifolia van Royen, nov. sp. — *Pag. 428 and fig. 22.*

Small c. 2 m high trees. Branchlets slender, terete, c. 3 mm in diam., densely blackish tomentose, glabrescent. *Leaves* conferted at apex of branchlets, elliptic, 2—4.5 by 0.9—2 cm, apex rounded or mucronate, base broadly cuneate to rounded; with a narrow intramarginal nerve; coriaceous, greyish tomentose above, greyish to ferruginously woolly below; midrib canaliculate above, prominulous below and minutely crested in basal part, secondary nerves 5—7, ascending at an angle of c. 60°, diminishing until inconspicuous, impressed above, prominulous below, tertiary nervation transverse, inconspicuous; petioles 3—5 mm long, canaliculate above, greyish or ferruginously tomentose. *Flowers* solitary; pedicels angular, 2—5 mm long, ferruginously tomentose. *Sepals* squamiform, but the inner ones triangular, 2.5—3 by 2—3 mm, apex obtuse or retuse, indistinctly crested, densely ferruginously tomentose on either side. *Corolla* pale yellow, 4—5 mm, lobes orbicular, 1.5—2 by c. 1.5 mm, apex truncate. *Stamens* 1.5—2 mm, inserted in the lower third, filaments subulate, c. 1 mm long, anthers ovoid, c. 1.3 mm long, apex obtuse, dehiscing introrsely or laterally. *Staminodes* lanceolate, c. 1.5 mm long, apex obtuse. *Ovary* conoid, c. 2 mm high and in diam., 5-celled, ferruginously tomentose; style terete, 5-ribbed, 1.5—2 mm long, sometimes slightly exsert. *Fruits* unknown.

Type specimen: *Kanehira & Hatusima* in A.
Distr.: New Guinea.

New Guinea. Western New Guinea, distr. Manokwari, Arfak Mts, Angi, alt. 2200 m, in open dry, low spinneys on the plateau between Lake Gita and Gija: *Kanehira & Hatusima 13891* (A), tree 2 m, petals pale yellow, fl. April.

Remarks: Provisionally this species has been inserted in *Planchonella* on account of its resemblance to the species of this Group 3, viz. the bright brownish ferruginous indumentum of the leaves which, however, is replaced in the mature leaves by a greyish indumentum. This resemblance is found also in the solitary flowers with the same type of indumentum, the conferted leaves and the shape of the latter which resembles those of *P. azou, P. lucens* and *P. sebertii* but are smaller and more elliptic. From these species *P. lanatifolia* differs in the small number of secondary nerves. Until the fruit has been found the decision is left open as to whether this species is a true *Planchonella* or a *Pouteria*, as is supposed by Kanehira and Hatusima, judging from the manuscript name '*Pouteria papuana*', on the label.

25. P. sebertii (Pancher) Dubard, 1912, 58; Däniker, Vierteljahrsschr. Nat. Ges. Zürich 78, 1933, 355; Guillaumin, Medd. Göt. Bot. Trädg. 19, 1952, 26 — *Chrysophyllum sebertii* Pancher in Pancher & Sebert, Bois

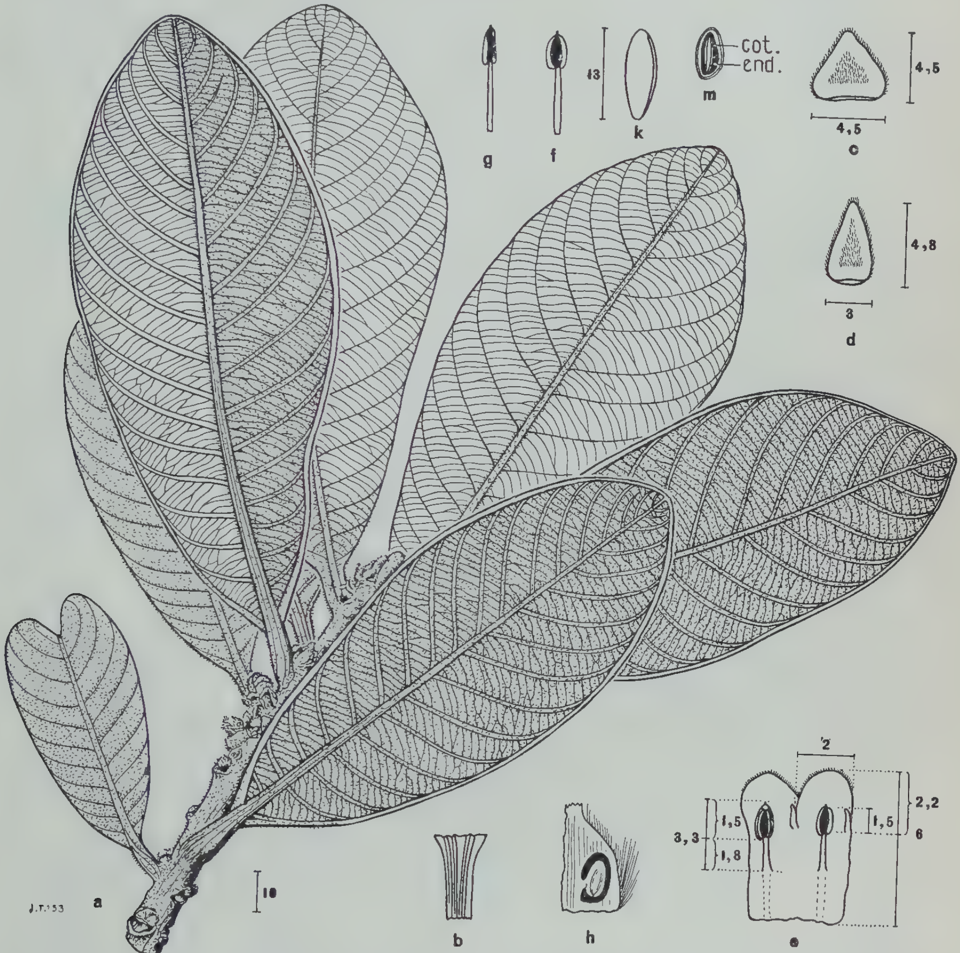


Fig. 23. *P. sebertii,* a. habit, b. petiole from above, c. outer sepal, inside, d. inner sepal, inside, e. part of corolla, inside, f–g. stamens, h. longitudinal section of gynaecium, k. seed, m. transverse section of seed (a–b. from *Franc s.n.*, c–n. from *Le Rat 526*).

Nouv.-Cal., 1874, 194 — *Pouteria sebertii* (Pancher) Baehni, 1942, 297 — *Sideroxylon lasiocladum* Baillon, Bull. Soc. linn. Paris 2, 111, 1890, 887 — *Fig. 23.*

Shrubs or small trees, 3—4 m. Branchlets angular, 5—7 mm in diam., densely greyish or ferruginously tomentose. *Leaves* scattered to subconferted at apex of branchlets, spatulate-oblong or obovate-oblong, 8—22 by 2—8 cm, apex acute or subacute, base rounded or subacute, shortly decurrent; margin involute, with a narrow intramarginal nerve, bullate; coriaceous, greyish woolly or tomentose above along midrib and nerves, ferruginously tomentose below; midrib prominulous above, flat in the basal part, prominent below, secondary nerves 12—19, ascending at an angle of 45°—60°(—90°), straight or curved, passing into the marginal nerve, impressed above, markedly prominent below, tertiary nerves transverse, impressed above, prominent below; petioles 7—20 mm, flat and with 2 ribs above which taper into the midrib, crested below, greyish or ferruginously tomentose. *Flowers* solitary or in few-flowered clusters; pedicels 1—6 mm, stout, ferruginously hirsute. *Sepals* 5, outer ones larger than inner ones, triangular to ovate, 4—5 by 3.5—5 mm, apex subacute, ferruginously hirsute without, ferruginously sericeous within. *Corolla* 5—6 mm long, lobes subquadrangular to orbicular, 2—2.5 by 1.8—2.2 mm, apex obtuse to subtruncate, margin finely ciliate. *Stamens* inserted slightly below the middle, 3—3.5 mm long, filaments subulate, 2—2.5 mm long, anther ovoid, 1—1.5 mm long, apex mucronate, dehiscing laterally. *Staminodes* subulate or lanceolate-spatulate, 1—1.5 mm long, apex acute. *Ovary* ovoid, 1—2 mm long and in diam., 5-lobed, ferruginously tomentose; style stout, 5-ribbed, 3—6 mm long, with 5 white stigmas. *Fruits* obovoid, c. 2 by 1 cm, with an up to 3 mm long remnant of the style, 2—3-seeded, apex truncate or rounded, ferruginously puberulous, pericarp thin, cartilaginous; seeds obovoid-fusiform, c. 13 by 6 by 3 mm, apex obtuse, base subacute, yellowish white, nitidous, testa thin, scar linear, nearly as long as seed, c. 0.5 mm wide, albumen copious, cotyledons foliaceous, radicle unknown.

Type specimen: *Sebert & Fournier 49* in P.

Distr.: New Caledonia.

New Caledonia. lateritic coastal regions: *Vieillard 2899* (BM), juv. fr.; Prony: *Franc s.n.* (K), fl. Dec.; ibidem, along streams: *Franc 1523 & 1682a* (L, P), fl.; ibidem: *Franc 1523 A* (Z), fr. June; Plain des Lacs: *Le Rat & Le Rat 526* (K), fl.; ibidem, near Madeleine Mine, in light scrub: *Däniker 286* (Z), small tree, fl. & fr. Oct.; ibidem, Pernod Creek: *Guillaumin & Baumann 8365* (Z), fl. Nov., tree 3 m; ibidem: *Guillaumin & Baumann 8360* (Z), tree 3 m, Nov.; ibidem: on plateau with iron-ore stones: *Däniker 286a* (Z), shrub or small tree; ibidem: *Franc 206* (L), fl. Oct.; ibidem, Pernod Creek, on serpentine: *Guillaumin & Baumann 8399* (Z), tree 3 m, fr. Nov.; Rivière des Lacs, in scrub along river: *Guillaumin & Baumann 6692* (Z), tree 5 m, fl. Oct.; ibidem, in scrub: *Guillaumin & Baumann 6521* (Z), tree 5 m, fr. Oct.; ibidem: *Guillaumin & Baumann 6724* (Z), tree 5 m, fr. Oct.; Mt Madeleine: *Guillaumin & Baumann 11767* (Z), shrub 3 m, fl. buds March; South Bay, between N'Go Bay and Touaourou: *Rohrdorf 76* (Z), fl. Sept.; ibidem: *Pancher 253* (P), fl.; without loc.: *Sebert & Fournier 49* (P), fl.

26. P. azou van Royen, nov. sp. — *Pag. 428 and fig. 24.*

Trees, 5—8 m. Branchlets angular, 3—6 mm in diam., greyish and ferruginously tomentose. *Leaves* conferted at apex of branchlets or scattered, obovate-oblong to elliptic-oblong, (3—)7—12.5 by 1.4—3 cm, apex acute or acutely acuminate, acumen 2—4 mm long, base cuneate; with a narrow intramarginal nerve, bullate; coriaceous, juvenile leaves ferruginously tomentose on either side, mature ones glabrous and nitidous above but sometimes greyish tomentose, ferruginously or greyish tomentose below and incompletely glabrescent; midrib prominulous above and grooved, prominent

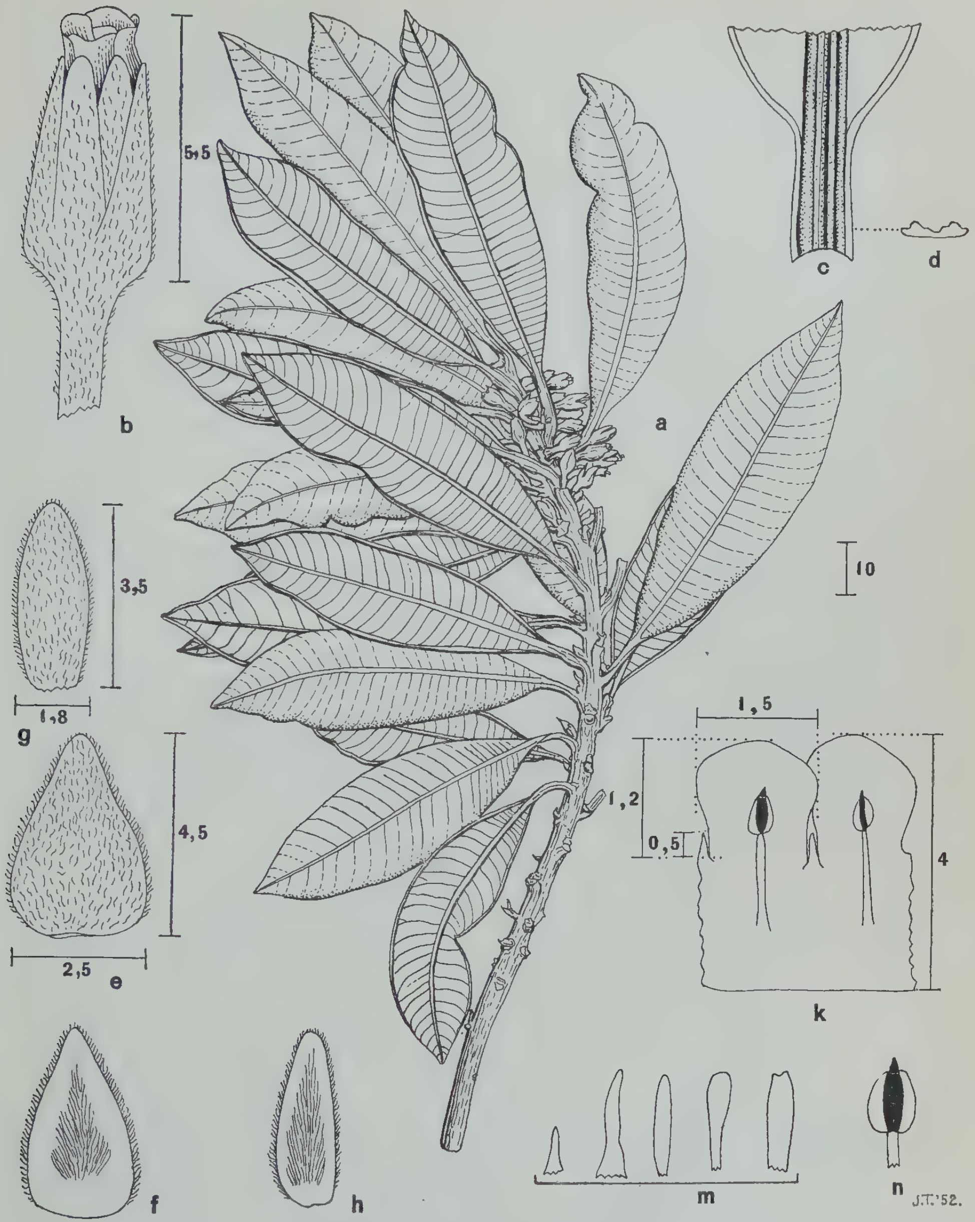


Fig. 24. *P. azou,* a. habit, b. flower, c. base of leaf with petiole, d. transverse section of petiole, e. outer sepal, outside, f. idem, inside, g. inner sepal, outside, h. idem, inside, k. part of corolla, inside, m. staminodes, n. anther. (*Le Rat & Le Rat 1424*).

below, secondary nerves 22—32, ascending at an angle of 65°—70°, in the basal part 85°—90° and closer to each other, straight, tips slightly curved, but in the apical parts of the leaf nerves curved, diminishing until inconspicuous near the margin, rarely archingly joined, impressed above, prominent below, tertiary nervation transverse but near midrib subparallel to the secondary nerves, inconspicuous; petioles 3—12 mm long, grooved above and with 2 narrow longitudinal ribs, greyish tomentose. *Flowers* yellowish, solitary or in few-flowered clusters, ♀ or ⚥; pedicels angular, 3—6 mm long, ferruginously puberulous to sericeous. Outer *sepals* ovate, 4—4.5 by 2.5—3 mm, apex obtuse, ferruginously sericeous to puberulous without, ferruginously sericeous within, inner sepals elliptic, 3—3.5 by 1.5—2 mm, apex obtuse, ferruginously sericeous without, sericeous within. *Corolla* 4—4.5 mm long, lobes pandurate, 1—1.2 by 1.4—1.6 mm, apex truncate or obtusely acuminate. *Stamens* 2—2.2 mm, inserted slightly below the middle, filaments subulate, c. 1.5 mm long, anthers ovoid, c. 1 mm long, apex mucronate, dehiscing laterally. *Staminodes* spatulate to linear or shortly subulate, 0.5—1.5 mm long, apex obtuse or irregularly serrate. *Ovary* ovoid, 1—1.5 by 1—1.5 mm, ferruginously tomentose; style cylindrical, 5-ribbed, 3.5—4.5 mm, stigma capitate. *Fruits* unknown.

Type specimen: *Le Rat & Le Rat 1424* in P.

Use: The wood is used for the construction of furniture.

Vern. name: azou.

Distr.: New Caledonia.

NEW CALEDONIA. Prony, Port-Boisé, lateritic soil, maritime zone: *Le Rat & Le Rat 1424* (L, P), tree 5—6 m, fl. pale yellow, Oct.; Prony, mountainous open forest: *Franc A 1711* (P), fl. April, = *Pouteria lasiantha (= P. dubia non [P. & S.] van Royen) non (Baillon) Dubard), Baehni, 1942, 324*; Prony, rocky forest: *Franc 1871* (P), fl. Dec. = *Pouteria lasiantha (= P. dubia non [P. & S.] van Royen) non (Baillon) Dubard), Baehni, 1942, 324*; Mt Dzumac: *Le Rat & Le Rat 1102* (P), fl.; Dombéa, road of Prise d'Eau: *Le Rat & Le Rat 2253* (P), tree 7—8 m, fl. Dec., wood very hard, (on the same sheet another label is stuck with the following details: no *35*, Prony, maritime zone, fl. whitish-yellow).

Remarks: This species resembles *P. dubia*, *P. lucens* and *P. rubicunda* but differs from *P. dubia* in the larger number of secondary nerves, 22—32 against 9—12, and from *P. rubicunda* in the smaller leaves and the more numerous secondary nerves, 22—32 against 12—26. Moreover it differs from *P. rubicunda* in the slender petioles, the straight secondary nerves, the smaller flowers and the shorter pedicels. It closely resembles *P. lucens* but differs from that species in the larger number of straight secondary nerves. From *P. dubia* it differs also in the straight secondary nerves and in the acute or acuminate leaves.

Undoubtedly these four species mentioned are closely related and one might suspect that some of the specimen are in fact hybrids. Some species of *P. azou*, as well as some of *P. lucens*, show sometimes details from each other, but also of *P. dubia* and *P. rubicunda*. Moreover, the last two species also mutually posses details of each other. However, for the moment the differences are large enough to keep the four species separate.

27. P. rubicunda (Pierre) Dubard ex Guillaumin, Ann. Mus. col. Marseille, sér. 2, 9, 1911, 287; Dubard, 1912, 58; Däniker, Vierteljahrsschr.

Nat. Ges. Zürich 78, 1933, 355 — *Lucuma ? rubicunda* Pierre ex Baillon, Bull. Soc. linn. Paris 2, 111, 1890, 883 — *Pouteria rubicunda* (Baillon) Baehni, 1942, 331.

Trees. Branchlets terete to angular, 4—8 mm in diam., ferruginously woolly to hirsute. Leaves conferted at apex of branchlets, oblanceolate to oblong, (5—)12—22 by 1—5.2 cm, apex short acutely or obtusely acuminate or acute, base subabruptly narrowed into the petiole or rounded; with a narrow intramarginal nerve; coriaceous, glabrous except whitish hirsute along midrib, but below ferruginously hirsute along midrib and nerves and often so mainly in the basal part of the leaf only; midrib broadly grooved and minutely crested above, prominent below, secondary nerves 12—26, ascending at an angle of 45°—90°, curved, diminishing until inconspicuous or archingly joined by some tertiary nerves, impressed above, prominent below, tertiary nervation transverse, impressed above or inconspicuous, prominent below; petioles stout, (3—)8—20 mm, narrowly grooved above, ferruginously woolly. *Flowers* solitary or in few-flowered clusters, ♀ or ⚥; pedicels terete or angular, stout, 8—16 mm, ferruginously hirsute. *Sepals* triangular to broadly ovate, 3.5—5.5 by 3.5—5.5 mm, apex obtuse, ferruginously hirsute without, ferruginously sericeous within, inner sepals ovate, 3—3.5 by 2—3 mm, slightly crested, otherwise similar to the outer ones. *Corolla* seen in bud only, 2.5—3 mm long, lobes orbicular, 1.8—2 mm long. *Stamens* unknown. *Staminodes* lanceolate, c. 0.5 mm long. *Ovary* ovoid, c. 1.5 by 1.5 mm, 5-celled, 5-sided, ferruginously hirsute; style stout, c. 1 mm long. *Fruits* obovoid, 2—2.5 by 0.7—1.2 cm, apex with a c. 2 mm long remnant of the style, 1—3-seeded, ferruginously hirsute at the top only, greyish brown, nitidous, pericarp thin, chartaceous; seeds obliquely obovoid, c. 1.8 by 1 by 0.8 cm, obtuse at either end, brown, nitidous, scar about ¾ of the length of the seed, 1—1.5 mm wide, brownish, albumen copious, cotyledons foliaceous, radicle curved, 0.5—1 mm, obtuse, shortly exsert.

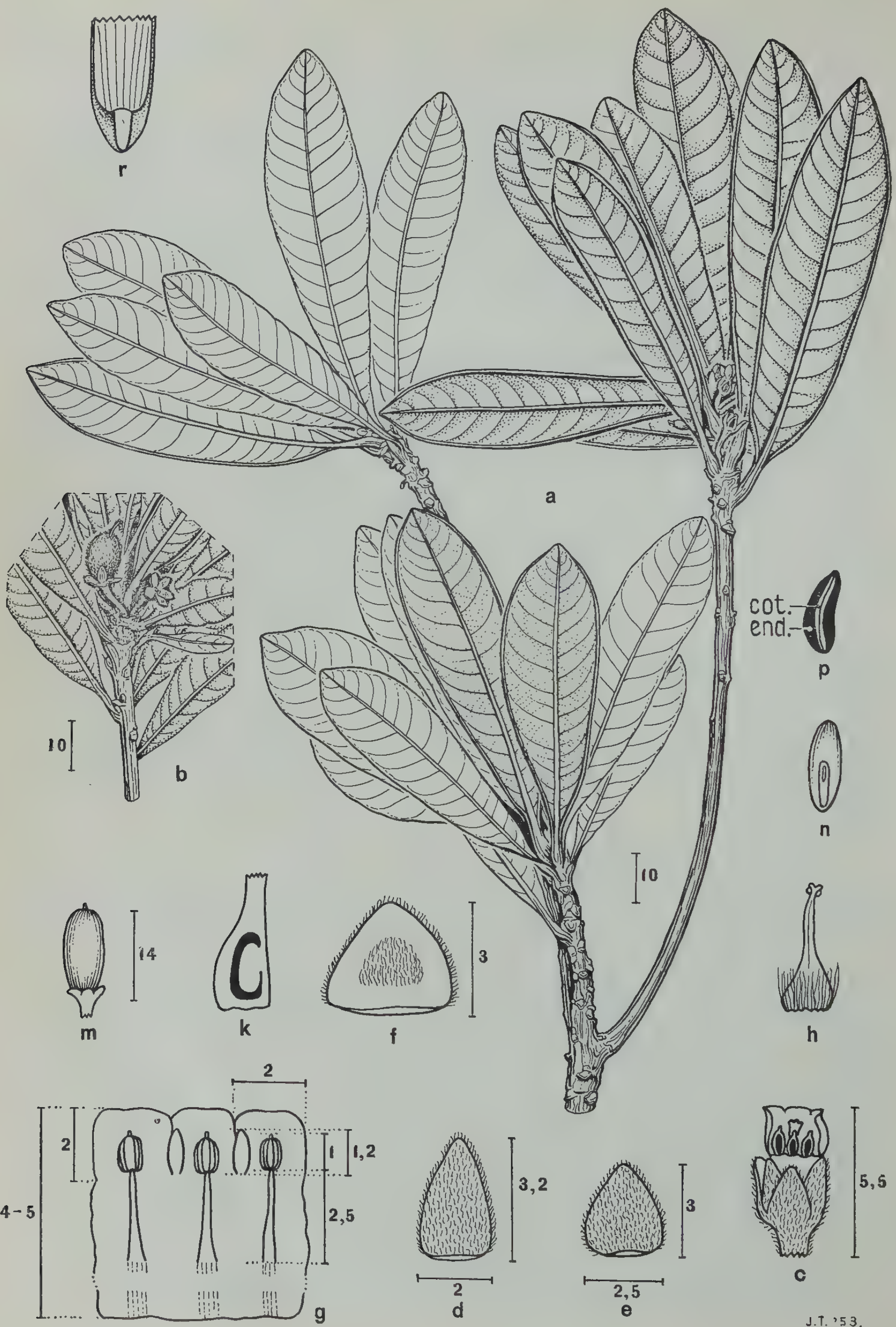
Type specimen: *Balansa 1825* in P.

Distr.: New Caledonia.

NEW CALEDONIA. Prony, forested mountain: *Franc 1771a* (P), tree, fl. Febr.; Kouailou, alt. 900 m: *Lécard 33* (P), fl. & fr.; Kanala: *Vieillard 2900* (P); ibidem, alt. 900 m: *Balansa 1825* (P), fl. & fr.

28. P. lucens van Royen, nov. sp. — *Pag. 429 and fig. 25.*

Shrubs, 3—5 m. Branchlets angular, 2—5 mm in diam., striate, ferruginously woolly, glabrescent. Leaves conferted at apex of branchlets, narrowly spatulate-oblong or oblanceolate, (2—)5—10 by 1—2.5 cm, apex acute, or obtusely or acutely acuminate acumen 1—3 mm long, base narrowly cuneate and subabruptly narrowed, decurrent; with a narrow intramarginal nerve, bullate; coriaceous, glabrous on either side but sometimes greyish or ferruginously puberulous on the basal part of midrib and leaf, nitidulous above, nitidous below; midrib prominulous on either side, narrowly canaliculate above, sometimes greyish tomentose above in the basal part only, greyish-yellowish or ferruginously tomentose below and glabrescent, secondary nerves 13—18, ascending at an angle of 50°—55°, but up to 90° in the basal nerves, curved, but straight in the basal part of the leaf,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archingly joined, impressed above, prominent below, tertiary nervation transverse, inconspicuous and impressed above, prominulous below; petioles 3—10 mm long, broadly grooved above and ferruginously tomentose or greyish tomentose. *Flowers* yellowish or yellow, mostly solitary; pedicels terete, 5—8 mm long, greyish or ferruginously sericeous or tomentose. *Sepals* ovate or triangular, 3—3.5 by 2—2.5 mm, apex obtuse, ferruginously sericeous within in the central part only. *Corolla* 4—5 mm long, lobes quadrangular, 1.5—2 by 1.5—2 mm, apex truncate or retuse. *Stamens* 2—3.5 mm, inserted in the lower third, filaments subulate, 1.5—2.5 mm long, anthers sagittate, 1—1.2 mm long, apex emarginate, rounded or mucronate, dehiscing laterally. *Staminodes* spatulate or ovate, 1—1.5 mm, apex obtuse or irregularly dentate. *Ovary* ovoid-conoid, 1.5—2 mm in diam. and high, 5-celled, 5-lobed, ferruginously hirsute at base; style cylindrical, stout, 2—3 mm long, apex 5-lobed. *Fruits* ellipsoid-obovoid, 1.2—1.5 by 0.5—0.7 cm, apex with an up to 4 mm long remnant of the style, one-seeded, ferruginously tomentose or sericeous, glabrescent, pericarp thin, chartaceous; seeds obliquely fusiform, 1—1.3 by 0.5—0.6 by 0.4—0.5 cm, obtuse or subacute at either end, brown, nitidous, scar slightly longer than or as long as half the length of the seed, 6—8 by 1.5—2 mm, greyish, albumen copious, cotyledons foliaceous, radicle conoid, 1—2 mm, obtuse.

Type specimen: *Le Rat & Le Rat 763* in P.

Distr.: New Caledonia.

NEW CALEDONIA. between, N'Go Bay and Touaourou: *Le Rat & Le Rat 763* (L, P), fl. Sept. (= *P. lasiantha* (= *P. dubia non* [*P. & S.*] *van Royen non (Baillon) Dubard*), *Däniker, Vierteljahresschr. Nat. Ges. Zürich 78, 1933, 364*); Prony, Bay à la Fôret Nord lateric soil, alt. 150 m: *Cribs 1450* (P), strongly branched shrub, 3—4 m, fr. Oct., yellowish; Prony: *Le Rat & Le Rat 1263* (or *263?*) (P), shrub 4—5 m, fl. yellow; Balade: *d'Aleizette 34 NC* (P); Vata: *Le Rat & Le Rat 788 E* (L, P).

Remarks: This species differs from other species in this Group in the glabrous, shiny leaves but is closely related to *P. dubia, P. azou* and *P. rubicunda.* Its seeds have a short scar and in this respect *P. lucens* is an intermediate state to *P. novocaledonica* and via that species to the genera *Sideroxylon* in South Africa and *Mastichodendron* in Asia.

29. P. novo-caledonica Dubard in Lecomte, Not. Syst. 2, 1913, 84, *descr.*; Guillaumin, Bull. Soc. bot. Fr. 89, 1942, 224 — *Planchonella neo-caledonica* Dubard, 1912, 51, *nomen* — *Sideroxylon neo-caledonicum* (Dubard) Baehni, 1942, 428 — *Fig. 26.*

Trees or shrubs ? Branchlets angular, 2—5 mm in diam., ferruginously tomentose, mature branches greyish whitish tomentose. *Leaves* scattered, oblanceolate-obovate, 4—6 by 1.5—2 cm, apex obtuse or short obtusely acuminate, base broadly cuneate, rather abruptly narrowing into petiole; with a narrow intramarginal nerve; coriaceous, glabrous above except along midib and base, ferruginously tomentose below, but glabrescent along mid-

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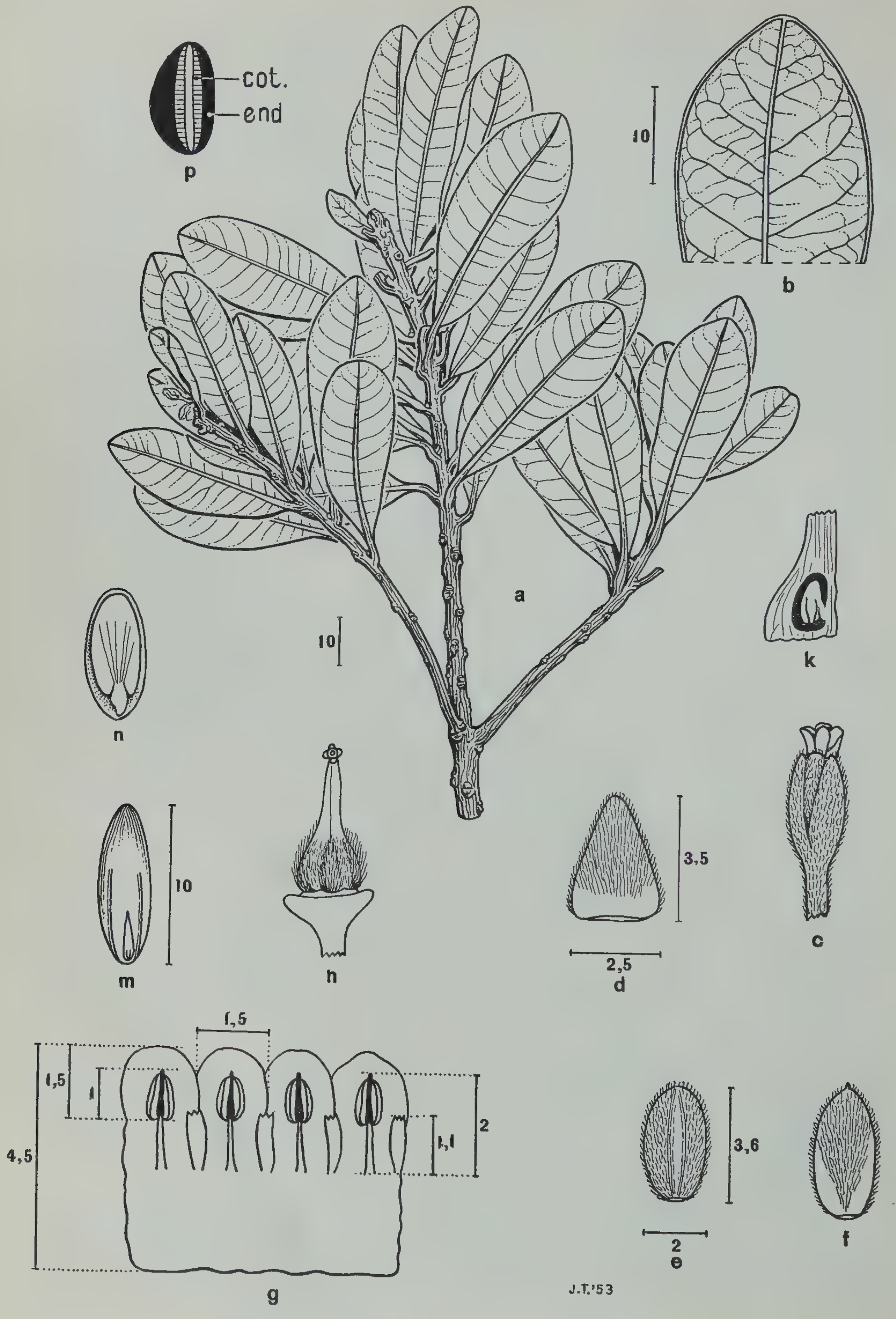
Fig. 25. *P. lucens,* a. flowering branchlet, b. branchlet with fruit, c. flower with some of the corolla-lobes removed, d. outer sepal, outside, e. inner sepal, outside, f. outer sepal, inside, g. part of corolla, inside, h. gynaecium, k. longitudinal section of gynaecium, m. fruit, n. seed, p. transverse section of embryo, r. one cotyledon and radicle. (a–k. from *Le Rat & Le Rat 763,* m–r. from *Cribs 1450*).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rib and base; midrib prominulous and canaliculate above, prominent below, secondary nerves 9—16, ascending at an angle of 60°—80° (—90°), curved, but straight and inconspicuous in the basal part, impressed above, prominent below, branched at their tips, rarely archingly joined, tertiary nervation transverse, sometimes subparallel to secondary nerves, inconspicuous and impressed above, sometimes invisible, inconspicuous below; petioles 4—8 mm long, canaliculate above, ferruginously or greyish tomentose. *Flowers* dirty yellow, or white, solitary or in few-flowered clusters; pedicels terete, 4—8 mm long, tomentose villous. *Sepals* 4 or 5, outer triangular to lanceolate, 3—4 by 2.5—3 mm, apex obtuse, ferruginously puberulous or sericeous without, ferruginously sericeous within except in the basal part, inner sepals elliptic, 2.5—3 by 2—2.5 mm, apex obtuse, ferruginously sericeous on either side. *Corolla* 4- or 5-lobed, 4—5 mm long, lobes orbicular, 1—2 by 1—1.2 mm, apex truncate, rounded, retuse or irregularly lobed. *Stamens* 4 or 5, 1.5—2.3 mm long, inserted slightly below the middle, filaments subulate, c. 1 mm, anthers ovoid, 0.7—1 mm, apex mucronate, dehiscing laterally. *Staminodes* lanceolate, 1—1.2 mm long, apex irregularly serrate. *Ovary* ovoid, 1—2 by 1—2 mm, 4- or 5-celled and -lobed, ferruginously hirsute; style stout, 4- or 5-sided, 2—2.5 mm, with 4 or 5 stigmas. *Fruits* obovoid, 10—13 by 7—9 mm, apex with a 2—3 mm long remnant of the style, one-seeded, sparsely ferruginously villous, nitidous; seeds fusiform, 8—10 by 4—6 by 3—4 mm, obtuse or subacute at either end, base sometimes falcate, dark brown, nitidous, scar in lower third only, ovate-oblong, c. 0.5 mm wide, whitish, albumen copious, cotyledons foliaceous, radicle stout, conoid, 1—2 mm long, obtuse, shortly exsert.

Type specimen: *Petit 130* in P.

Distr.: New Caledonia.

New Caledonia. without loc.: *Petit 130* (P), fl. & fr.; according to Guillaumin, 1942, also the following specimens: *Pancher 105, 107, 228, 619, Vieillard 2903, 2917.*

Remarks: Guillaumin, 1942, regarded *Lucuma neo-caledonica* Engler, *L. lecomtei* Guillaumin and *Pichonia elliptica* Pierre as conspecific with *Planchonella novo-caledonica* Dubard, but this is apparently a mistake. The type of *P. novo-caledonica* Dubard (*Petit 130*) and that of *Lucuma neo-caledonica* Engler (= *Rhamnoluma novo-caledonica* (Engler) Baillon, (*Deplanche 442*), are quite different and even belong to different genera, the former being a *Planchonella*, the latter representing a *Pouteria*. Moreover the type of *Lucuma lecomtei* Guillaumin (*Franc 464*) is also quite different from *Deplanche 442*, the pedicels being much shorter, e. g.

The most remarkable feature of this species is the rather short scar. On account of this detail, Dubard, 1912, including this species in *Planchonella,* founded a new section, *Egassia.* As is pointed out in *P. lucens* the seeds of that species have a scar which reaches halfway the seed, or is slightly longer. This type of scar seems to be transient to the usual, linear scar in the other species in *Planchonella.*

Fig. 26. *P. novo-caledonica,* a. habit, b. part of leaf from below, c. flower, d. outer sepal, inside, e. inner sepal, outside, f. inner sepal, inside, g. part of corolla, inside, h. gynaecium, k. longitudinal section of gynaecium, m. seed showing scar, n. longitudinal section of embryo, p. transverse section of embryo. (*Petit 130*).

Group 4

30. **P. firma** (Miquel) Dubard, 1912, 59; Wyatt-Smith, Research Pamphlet 4, 1954, 56 — *Chrysophyllum firmum* Miquel, Fl. Ind. Bat., Suppl. 1860, 579 — *Pouteria firma* (Miq.) Baehni, 1942, 284.

Trees, up to 35 m. Branchlets terete to angular, 2—5 mm in diam., yellowish or ferruginously sericeous, glabrescent. *Leaves* scattered, lanceolate-oblong, or obovate-oblong, (4—)8—14 by (2—)3—6 cm, apex obtuse or acute, or obtusely or acutely acuminate, acumen 3—12 mm long, base cuneate, shortly decurrent; margin undulate, with a narrow, intramarginal nerve; coriaceous or chartaceous, juvenile leaves whitish villous on either side but ferruginously villous on the nerves, very soon glabrous except for a few scattered hairs along midrib and nerves; midrib slightly impressed above and minutely crested, prominent below, secondary nerves 7—20, ascending at an angle of 60°—70°, straight or curved but sometimes only the apical ones curved, but, if all nerves straight, they are curved near the margin, diminishing until inconspicuous, but also often archingly joined in the apical part of the leaf, prominent on either side, but more conspicuous below, tertiary nervation transverse, descending near midrib, inconspicuous or invisible above, prominulous and distinct below; petioles (0.8—)2—3(—6.2) cm, narrowly or broadly canaliculate above, whitish or ferruginously velutinous to glabrous. *Flowers* white or yellow, becoming red, ♀ and ⚥, in clusters along the main branchlet but sometimes along a leafless or almost leafless axillary shoot; pedicels angular, 0.3—0.9 cm in ♀, 0.3—2.8 cm in ⚥ flowers, with a whitish or ferruginously indumentum. *Sepals* triangular or broadly ovate, 2—4.5 by 2—3 mm, in fruit up to c. 10 by 10 mm, apex obtuse, acute or short obtusely or acutely acuminate, ferruginously pubescent on either side, in the ♀ flowers the sepals often smaller (2.5—3 by 2—2.5 mm) than in the ⚥ flowers (3—4.5 by 2—3 mm). *Corolla* 2—6 mm long, in ♀ flowers 2—3.5 mm, in ⚥ flowers 2.5—6 mm long, lobes subquadrangular, 1.5—2.5 by 1.5—2.5 mm, apex truncate or subrotundate. *Stamens* inserted in the basal third, in ⚥ flowers 2.5—3 mm long, filaments subulate, 2—2.5 mm long, anthers ovoid, 1—1.5 mm long, apex obtuse, dehiscing laterally. *Staminodes* filiform to lanceolate, or spatulate, 1—1.5 mm long, apex truncate. *Ovary* mostly globose, 1—1.5 by 2—2.5 mm, sometimes reduced, 5-lobed, 5-celled, disk 10-lobed, free, ovary and disk ferruginously hispidulous; style stout, cylindrical, narrowing towards the tip, 2.5—3.5 mm, apex with 5 stigmas. *Fruits* 1—6 together, globose, ovoid or subovoid, 0.8—2.5 by 0.3—1.6 cm, 1—4-seeded, apex with a short remnant of the style, base of style and fruit with a ring of ferruginous hairs, otherwise glabrous and black or brown, or whitish to yellowish, nitidous or nitidulous, pericarp thin, chartaceous; seeds compressed, ellipsoid, 0.6—2.3 by 0.3—0.6 by 0.2—0.4 cm, apex obtuse, base subacute, testa thin, brown, nitidous, scar linear, as long as the seed, 0.5—1.5 mm wide, light brown, albumen copious, cotyledons foliaceous, radicle relatively slender, 1—1.5 mm long, obtuse, exsert.

Type specimen: *Teysmann s.n.* in BO.

Distr.: Malay Peninsula, Malaysia, Solomons.

Remarks: *P. firma* is fairly variable in pubescence and width of the leaves, length of the pedicels and petioles and the size of flowers and fruits. The two varieties in this species are not sharply distinguished, the type-variety having its centre in the Sunda Islands, the var. *microcarpa* in the Moluccas and New Guinea. Several species in the Moluccas, New Guinea, the Bismarck Archipelago and the Solomons, *P. lamprophylla, P. macropoda, P. moluccana, P. monticola, P. nebulicola* and *P. sussu* are closely related to *P. firma.* They differ from *P. firma* proper in the indumentum of the leaves (*P. monticola* with a minute appressed tomentum on the lower side of the leaves), in the shape of the staminodes, which are ribbon-shaped and truncate in *P. firma,* more acute in *P. monticola* and *P. moluccana,* rounded and broader in *P. sussu,* scale-like in *P. lamprophylla,* unknown in *P. nebulicola,* and lanceolate, obtuse and entire in *P. macropoda,* in the indumentum of the fruits, which are densely tomentose in *P. moluccana,* and glabrous or at least glabrescent in the other species, as far as the latter are known at present. The separation of the species of the '*firma*'-group is therefore still of a provisional nature. The type of inflorescence found in this species and others in this Group is different. Usually clusters or solitary flowers in the axils of leaves are found, but occasionally these clusters or flowers are inserted along an axillary shoot. This detail is characterizing this Group and in case of doubt where to insert a certain species in Group 4 or another, it has been used to insert that species in Group 4. In *P. firma* it is distinctly developed in *Teysmann s.n.* in Leiden and *van Rossum 62* also in Leiden.

The identification of sterile specimens, particularly of var. *microcarpa* is uncertain and probably numerous specimens ascribed to var. *firma,* might belong to var. *microcarpa.* They often recall such Papuan species as *P. sussu,* and it is possible that transitional forms will be found.

Var. **firma** — *P. firma* (Miq.) Dubard, var. *typica* H. J. Lam 1925, 203, 266; idem, 1927, 471 — *Pouteria firma* (Miq.) Baehni, var. *typica* (H. J. Lam) Baehni, 1942, 285 — *Planchonella fragrans* (Elmer) H. J. Lam, Proc. 6th Pac. Sc. Congres, Berkeley, 1939, 680 — *Sideroxylon fragrans* Elmer, Leafl. Phil. Bot. 3, 1910, 871 — *Sideroxylon gitingense* Elmer, l. c., 873.

Leaves lanceolate to ovate, young more or less densely woolly pubescent underneath, glabrescent. Pedicels stout, mostly woolly pubescent, 0.2—1.2 cm long. *Sepals* 0.3—0.4 cm long, pubescent on either side. *Flowers* often ♀ only, *stamens* consisting of filaments without anthers. *Fruits* obovoid, 1.2—2.2 by 0.7—1.6 cm.

Type specimen: *Teysmann s.n.* in BO.

Vern. names: *Sumatra,* madang kaju balam, pinago; *Bangka,* martitjang, njato lambar, njato labor, njatuh laber, njato kaju djerita; *Belitung,* njatu lowar; *Karimata,* njato barat; *Borneo,* martjetjang, njato lambar; *Celebes,* bako bako, beratu, kanepolo, karawatu, kume koru puté, kume wasu, kume watu, natu, rapa, sama sama pangal, maraula, molontaipang, bakko-bakko, kumewasu, kume koru, kume batu, tabonga wana, kane polo, lepo lepo, pelutan; *Banda,* eru putih; *Amboina,* lapi lapi, kombili;

Saparua, kombili; *Buru.* hiwit; *Ceram,* sidi sidi; *Talaud,* alĕwata, gumatu snagita, bitawah batu; *Morotai,* oteomawali.

Use: The wood is soft and easy to fashion. It is used for timber and furniture. Together with betel it is chewen against sprue.

Distr.: Malay Peninsula, Sumatra, Riouw, Bangka, Belitung, Karimata, Philippines, Borneo, Celebes, Talaud, Obi, Ternate, Morotai, Banda, Buru, Ceram, Amboina, Saparua, Flores, Kai, Biak, Schouten Islands, New Guinea, Manus, Solomons.

MALAY PENINSULA. Johore, Mt Ophir: *Hullett 759* (BM, SING); Satindan Isl., Mersing, sea level, common in rocky Eugenia grandis forest: *Corner 29764* (SING), fl. & fr. Aug. — Penang, West Hill, alt. c. 800 m: *Curtis 1575* (SING), small tree, juv. fr. May; Government Hill: *Ridley s.n.* (BM), fl. white, March.

BANGKA. Blidju, alt. 20 m: *Greshoff 17* (BO, L), fl. Oct.; Mt Mangkol, alt. 50 m: *Kostermans 709* (BO, L), fl. Sept.; ibidem, granite, primary forest: *Kostermans 699* (BO, L), latex sticky, fl. Sept.; Lobok Besar: *Kostermans 232* (BO, L, SING), fl. Aug.; ibidem, alt. 20 m: *Kostermans 581* (BO, L, SING), fl. Sept., dirty yellow; ibidem, sandy soil, primary forest: *Kostermans 1244* (BO, L), calyx brown, corolla white, fl. Oct.; ibidem: *Kostermans 160* (BO, L, SING), fl. Aug., buttresses 60 cm righ; Mt Pading, Lobok Besar, alt. 20 m: *Kostermans 174* (BO, L), fl. Aug.; ibidem, alt. 20 m, sandy soil: *Kostermans 829* (BO, L), fl. white, Sept.; Plangas: *Teysmann s.n.* (BO), fl. & fr.; without loc.: *de Vriese* 3184 (L); Lobok Besar, Bt Padang: *Anta 908* (BO, SING), tree 14 m, fr. white, Sept.

BELITUNG. without loc.: *Riedel s.n.* (FI), fl.

BORNEO. Mt Salumbang: *Korthals s.n.* (L), fl.

LUZON. Prov. Cagayan: *Bernardo 15237* (P), fl. Oct. — prov. Bataan, Mt Mariveles, Lamao river: *Whitford 159* (NSW), fr. May; without loc.: *For. Dept. 1556* (L), fl.

SIBUYAN. Prov. Magallanes, Mt Giting-Giting: *Elmer 12354* (BM), fl. April; ibidem: *Elmer 12190* (L, PNH), fl.; ibidem: *Elmer 12332* (L, PNH), fl.

BOHAL. without loc.: *42583* (BM, SING), fr. Aug.

CELEBES. Malili, Tominangga, alt. 300 m: *NIFS bb 8559* (BO, L); ibidem, Usu: *NIFS Cel./II-309* (BO, L, SING); ibidem, alt. 100 m: *NIFS Cel./II-380* (BO, L), fl. July; ibidem, alt. 200 m: *NIFS Cel./II-344* (BO, L, SING), fr. April; ibidem, alt. 100 m: *NIFS Cel./II-449* (BO, L, SING), fl. & fr.; peninsula SE of Kendari: *Beccari s.n.* (FI) fl. June; Menado: *Beccari s.n.* (FI).

AMBOINA. Hatiu Besar, alt. 280 m: *NIFS bb 10133* (BO, L); near Aylapi: *Beccari s.n.* (FI), fl.

SAPARUA. Haruku, Hahunaneri, alt. 300 m: *NIFS bb 14301* (BO, L), fr. March.

CERAM. Artafela, alt. c. 60 m: *NIFS bb 25891* (BO, L).

BURU. Kak Tua, alt. c. 800 m: *NIFS bb 22823* (SING).

OBI. Laiwui, Mt Damar Manomang, alt. 600 m: *de Haan 620* (BO), fl. Nov.

MOROTAI. Mt ParePare, alt. 1000 m: *Kostermans 1176* (BO, L), fl. May; ibidem, alt. 1000 m: *Kostermans 1290* (BO, L); Mt Sangawo, alt. 800 m: *Kostermans 1028* (BO, L), fr. May.

SCHOUTEN ISL.. without loc., alt. 10 m: *NIFS bb 15912* (BO, L).

BIAK. without loc., alt. c. 50 m: *NIFS bb 30690* (BO, L, SING); ibidem: *NIFS bb 30804* (BO, L, SING); ibidem: *NIFS bb 30711* (BO, L, SING).

NEW GUINEA. Western New Guinea, distr. Hollandia, Cycloop Mts, path Ifar—Ormoe, saddle between Mt Baboko and Mt Merariboeh, alt. 1220, primary forest: *van Royen 3691* (L), tree 22 m, fl. light brown, Oct.; ibidem, Jaboe Creek, alt. 920 m, in primary forest along creek: *van Royen 3772* (L), tree 22 m, fl. Oct., red, buttresses up to 1.5 m — Northeastern New Guinea, Sepik river: *Ledermann 6538* (K), fl.; ibidem: *Ledermann 6703* (K), fl.; Aiyura, alt. 2000 m: *Womersley 3378 (= NGF 3378),* fl. Nov. — Southeastern New Guinea, Boridi, alt. c. 1700 m: *Carr 13354* (BM, L, SING), fl. Sept.; Lalarim alt. 1700 m: *Carr 15815* (SING), fl. Febr.; ibidem, alt. c. 1700 m: *Carr 16000* (SING), tree 30 m, March; Mt Yule: *von Mueller s.n.* (MEL).

MANUS. without loc.: *NGF 564* (L, LAE), June.

SOLOMONS. Ysabel, Tatamba, hardwood forests, alt. 50 m: *Brass 3433* (L), tall tree.

Remarks: Closely related to *P. firma* and even conspecific with the latter is *P. fragrans*. Its main difference from *P. firma* were the shorter pedicels and longer petioles and the larger flowers. In several, recently collected, specimens of *P. firma* the petioles are as long as those of *P. fragrans*. Also the length of the pedicels is too small a detail to separate the two species. The size of the flowers is also unimportant to base a species. Therefore *P. fragrans* is regarded as conspecific with *P. firma* var. *firma*.

Var. **microcarpa** (Burck) H. J. Lam, 1925, 203 — *Sideroxylon microcarpum* Burck, Ann. Jard. bot. Bzg 5, 1886, 17, t. 3 — *Pouteria firma* (Miq.) Baehni, var. *microcarpa* ('Lam') Baehni, 1942, 286.

Leaves mostly lanceolate, sometimes subpubescent when young but mostly glabrous from the beginning, shiny. Pedicels slender, appressedly tomentose, 0.9—2.8 cm long. *Sepals* 0.2 cm long, pubescent on either side. All flowers hermaphroditic. *Fruits* ovoid, 0.8—1.6 by 1—1.1 cm.

Type specimen: *Teysmann 1880* in BO.

Vern. names: *Celebes*, makuranga, lepo lepo; *Amboina*, aylapia, raupah putih, kaju lapei lapei.

Distr.: Celebes, Flores, Talaud, Morotai, Amboina, Saparua, Kai, New Guinea, Solomons.

CELEBES. Kandari: *Beccari s.n.* (P), fl. June.

AMBOINA. without loc.: *Burck 5095* (P), June; ibidem: *Teysmann 1880* (BO, L), fl. & fr.

WETAR. Mt Ler-ai, N of Ilwaki, alt. 775 m: *NIFS bb 27213* (BO, L).

NEW GUINEA. Western New Guinea, Idenburgh river, 6 km SW of Bernhard Camp, alt. 1220 m: *Brass & Versteegh 12532* (L), juv. fr. green, ripe one red-brown, Febr.; ibidem, 15 km SW of Bernhard Camp, alt. 1830 m: *Brass & Versteegh 11930* (L, LAE), Jan.

SOLOMONS. Bougainville, between Lake Luralu and Knoiguru, Buin, alt. 1200 m, rainforest: *Kajewski 2124* (BO, L, NSW, SING), fr. green-brown, with a flattened end, with small sharp protuberance, milky, 2-seeded, Aug.

31. P. foxworthyi (Elmer) H. J. Lam, Proc. 6th Pac. Sc. Congres, Berkeley, 1939, 678 — *Planchonella firma* (Miq.) Dubard, var. *typica*, H. J. Lam, 1925, 203, p.p. — *Sideroxylon foxworthyi* Elmer, Leafl. Phil. Bot. 5, 1913, 1836 — *Pouteria firma* (Miq.) Baehni, 1942, 285, p.p.

Trees, up to 10 m. Branchlets angular to terete, c. 7 mm in diam., ferruginously tomentose, glabrescent. *Leaves* subconforted at apex of branchlets or scattered, elliptic-oblong, 20—25 by 7—8 cm, apex obtuse, or short obtusely acuminate, acumen 3—8 mm long, base cuneate and sometimes oblique, shortly decurrent; margin slightly involute when dry, with a narrow intramarginal nerve; rigidly chartaceous, ferruginously tomentose above but glabrescent and then nitidulous, densely ferruginously tomentose below but glabrescent except along midrib and nerves and scattered patches on the surface (ultimately completely glabrescent ?); midrib impressed above and minutely crested, stoutly prominent below, secondary nerves 16—20, ascending at an angle of 65°—85°, straight, but curved near margin and diminishing until inconspicuous, sometimes a few nerves archingly joined, apical nerves curved, impressed above, prominent below, tertiary nervation transverse, inconspicuous above, prominulous below;

petioles 2—3 cm long, canaliculate, greyish or ferruginously tomentose. *Flowers* in few- to many-flowered clusters; pedicels 1.5—2.2 cm long, angular, densely ferruginously pubescent. *Sepals* broadly ovate to rotundate, 4—4.5 by 3.5—4.5 mm, apex obtuse, brownish ferruginously velutinous on either side, inner sepals more elongate and smaller than outer sepals. *Corolla* 4—5 mm long, lobes subquadrangular, 1—2 by 1.5—2 mm, truncate. *Stamens* 2—3 mm long, inserted slightly below the middle, filaments subulate, 2—2.5 mm long, anthers sagittate-ovoid, c. 1 mm long, apex indistinctly mucronulate, dehiscing laterally. *Staminodes* lanceolate-oblong, 1—2 mm long, apex obtuse, acute or irregular. *Ovary* globose, subcompressed, 1—1.5 by 2—2.5 mm, 5-lobed, ferruginously hispidulous; style stout, cylindrical but tapering to the tip, 3—3.5 mm long, 5-sided, capitate. *Fruits* unknown.

Type specimen: *Elmer 12824* in PNH.

Distr.: Philippines.

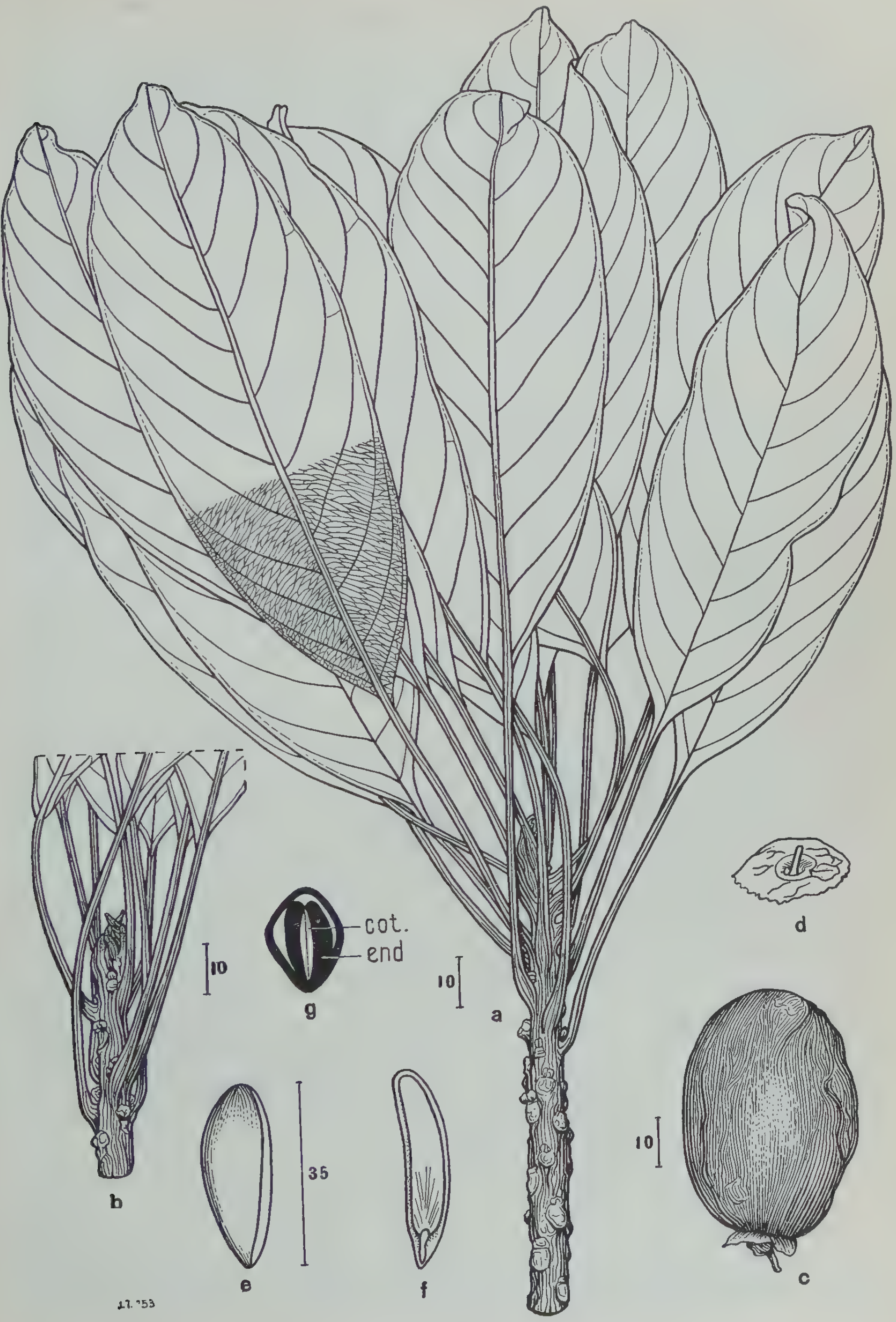
PALAWAN. Puerto Princesa, Mt Pulgar: *Elmer 12824* (FI, L, NSW, Z), fl. March. MINDANAO. Prov. Bukiduon, without loc.: *Rola 26531* (BM), fl. April.

Remarks: This species is closely related to *P. firma* but is distinguished from the latter by its larger and broader leaves, which are pubescent underneath particularly on the nerves, its long pedicels (c. 2 cm long) and the ribbon-shaped, truncate to obtuse or acute staminodes, which are 1—2 mm long. However, if more material is present in the future it might will be inserted in *P. firma*.

32. P. macrocarpa van Royen, nov. sp. — *Pag. 429 and fig. 27.*

Trees. Branchlets stout, terete, c. 8 mm in diam., blackish grey or ferruginously sericeous, glabrescent. *Leaves* scattered, subconferted at apex of branchlets, narrowly elliptic, 12—22 by 3.5—6.5 cm, apex obtuse or indistinct obtusely acuminate, base cuneate, shortly decurrent; with a narrow intramarginal nerve; coriaceous, glabrous and nitidous above, dull and glabrous below except whitish sericeous along midrib; midrib broadly impressed above and minutely crested, markedly prominent below, secondary nerves 8—12, ascending at an angle of 35°—55°, slightly curved but mainly straight and curving at tips only, flat to impressed above, prominent below, tertiary nervation transverse, prominulous above, prominent below, the minute reticulate nervation between the transverse ones forming prominent alveoles above; petioles 3.5—8.5 cm long, indistinctly and narrowly canaliculate above, finely ferruginously or rarely greyish sericeous. *Flowers* unknown. *Fruits* dark green, ellipsoid, 5—6 by 3.5—4.5 cm, apex obtuse, 1—3-seeded; style slightly sunk into the apex, glabrous, nitidous, pericarp fleshy but thin; seeds obovoid, laterally flat, c. 3.5 by 1.8 by 1.2 cm, obtuse at either end, brown, nitidous, scar slightly shorter than the seed, c. 3 mm wide, light brown, dull, albumen copious, cotyledons foliaceous, radicle subulate, c. 6 mm long, acute, exsert. Calyx in fruit up to 1.5 cm in diam., lobes ovate-orbicular, c. 6 by 7 mm, apex obtuse, ferruginously tomentose within, glabrous without; pedicel slender, c. 5 by 1 mm, glabrous.

Fig. 27. *P. macrocarpa*, a. habit, b. apical part of branchlet showing budscales, c. fruit, d. top of fruit with remnant of style, e. seed, f. longitudinal section of seed, g. transverse section of seed. (*Pearson Brs s.n.*).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Type specimen: *Pearson Brothers s.n.* in BRI.
Distr.: Australia.

AUSTRALIA. Queensland, Cook distr., Kaban: *Pearson Brs s.n.* (BRI), fr. Jan.

Remarks: This species is closely related to *P. firma* but differs in the smaller angle between midrib and secondary nerves, in the, on the whole, smaller number of the latter, in the much longer petiole and the larger fruits. According to a letter added to the type specimen this species seems to be confined to a limited pocket in the Evelyn Tableland.

33. **P. sussu** (Engler) H. J. Lam, Nova Guinea 14, 1932, 564, t. 119 — *Palaquium sussu* Engler, Notizbl. Berl. 1, 1895, 101 — *Pouteria sussu* (Engler) Baehni, 1942, 315.

Trees, 25—30 m. Branchlets angular, 3—5 mm in diam., ferruginously puberulous. *Leaves* scattered, elliptic-oblong or lanceolate-oblong, 10—19 by 3—6.5 cm, apex acute or short obtusely acuminate, acumen 2—7 mm long, cuneate at base and decurrent; margin undulate, with a narrow intramarginal nerve, often bullate; coriaceous, but juvenile leaves membranous, glabrous on either side, nitidous above, dullish below; midrib grooved and with 2 minute crests above, dullish below, secondary nerves 9—15, ascending at an angle of (50°—)60°—80°(—90°), straight and markedly curved at tips only, but sometimes nerves in the apical part of leaf curved, diminishing until inconspicuous, grooved and narrowly crested above, prominent below, tertiary nervation transverse but subperpendicular to the midrib near the latter and recurved; petioles 1.8—4.5 cm long, grooved above, widened at base, glabrous. *Flowers* ♀ and ⚥ in few- to many-flowered axillary clusters or rarely in few-flowered clusters along a leafless axillary shoot (sometimes with reduced leaves), with an angular, up to 2.5 cm long, striate, yellowish ferruginously puberulous rachis; pedicels angular, 5—20 mm long, greyish ferruginously puberulous. *Sepals* 5 or 6, broadly ovate, 3—5 by 3.5—5.5 mm, apex obtuse, greyish ferruginously puberulous without, ferruginously sericeous or woolly within. *Corolla* 5- or 6-lobed, 5—6 mm long, lobes ovate, 2—3.5 by 1.5—2 mm, apex obtuse, emarginate, dehiscing laterally. *Staminodes* ovate to spatulate, 0.7—1.5 mm, apex obtuse. *Ovary* globose, 5- or 6-celled, 1—1.5 mm in diam., disk 10-lobed, ferruginously hirsute; style stout, 2—3 mm long, capitate. *Fruits* obovoid, c. 6 by 4 mm, crowned by the persistent style, densely ferruginously tomentose, partly glabrescent, pedicels stout, 1.5—2.5 cm long, ferruginously puberulous, glabrescent; calyx 5—10 mm in diam., ferruginously puberulous without, ferruginously woolly to sericeous within; mature fruits red, obovoid, 2.8—3.5 by 1—1.2 cm, densely ferruginously tomentose, 3—5-seeded, seeds incompletely known, scar nearly as long as seed.
Type specimen: *Kaernbach* in B.
Neotype specimen: *Clemens 888* in L.
Vern. name: sussu.
Distr.: New Guinea.

NEW GUINEA. Western New Guinea, distr. Manokwari, Mt Arfak, near Putat: *Beccari 897* (A, FI, P), fl. Oct.; Rawak: *Gaudichaud 117* (G.-Del., P), fr. — Northeastern New Guinea, Morobe distr., Sattelberg, hillforest, alt. c. 1000 m: *Clemens 888* (A, B, L), fl. & fr. Nov.; ibidem: *Clemens 1697* (L), fr. Jan.; ibidem, open or secondary bush, alt. c. 1100 m: *Clemens 3068* (A, B), fr. May; Finschhafen, c. 900 m: *Kaernbach 20,* fl., *ex litt.*

Remarks: Since the type specimen in the Berlin herbarium has been destroyed, *Clemens 888* has been indicated as a neotype specimen as nowhere did a duplicate of the type turn up during the study of this genus.

The juvenile fruit has been described from *Clemens 1697* in Leiden and the mature fruit from *Clemens 3068* in the Arnold Arboretum.

In *Clemens 888* in Leiden the flowers are clustered and axillary, but in one of the lowest leaf axils a short shoot is found with flowers in clusters along the latter and apparently bearing a few leaves, of which the blades are missing here. This type of inflorescence is not common in *P. sussu* but this species also seems to have a potentiality towards this type as has *P. firma* — to which it is closely related —, *P. nitida* in which it is normal, *P. sarcospermoides,* and *P. pedunculata.*

34. P. lamprophylla (Krause) H. J. Lam, Nova Guinea 14, 1932, 564, t. 120 — *Sideroxylon lamprophyllum* Krause, Engl. Bot. Jahrb. 58, 1923, 481 — *Pouteria ? lamprophylla* (Krause) Baehni, 1942, 333.

Trees, 20—25 m. Branchlets terete, but angular near apex, c. 4 mm in diam., reddish brown, sparsely ferruginous tomentose, glabrescent. *Leaves* scattered, oblanceolate-spatulate to oblong-ovate, 10—18 by 3.5—4.5 cm, apex obtusely to acutely acuminate, acumen up to 1 cm long, base broadly cuneate; with a narrow, intramarginal nerve; coriaceous, glabrous, but midrib ferruginously tomentose below; midrib grooved and minutely crested above, prominent below, secondary nerves 10—15, ascending at an angle of 50°—70°, curved, diminishing until inconspicuous, grooved above, prominent below, tertiary nervation dense, transverse, prominulous on either side but more distinct below; petioles grooved above, rounded below, 1.8—3.5 cm, ferruginously tomentose. *Flowers* in few-flowered clusters, ♀ or ⚥; pedicels angular, 0.7—1.5 cm, ferruginously tomentose. *Sepals* ovate to triangular, 2.5—4 by 2.5—3 mm, apex obtuse (according to Krause acute), densely ferruginously tomentose without, ferruginously sericeous within, margin fimbriate. *Corolla* 3—5 mm long, lobes ovate-orbicular, 1.5—2.5 by 1.5—2.5 mm, apex obtuse. *Stamens* inserted in the middle (according to Krause), sometimes reduced. *Staminodes* obovate to obcuneate, 0.5—1 mm long, apex irregularly lobed. *Ovary* ovoid-globose, 2—2.5 by 2—2.5 mm, 5-celled, disk 10-lobed, densely ferruginously hirsute; style stout, 1—2 mm long. *Fruits* unknown.

Type specimen: *Ledermann 10318* in B.

Lectotype specimen: *Ledermann 10318* in L.

Distr.: New Guinea.

New Guinea. Northeastern New Guinea, Sepik region: *Ledermann 10318* (K, L), fl.

Remarks: As the type specimen in the Berlin herbarium has been destroyed, the material in Leiden has been chosen to represent the type specimen.

35. P. maculata van Royen, nov. sp. — *Pag. 429 and fig. 28.*

Trees, up to 25 m. Branchlets angular, 3—6 mm in diam., greyish and ferruginously tomentose. *Leaves* scattered, elliptic-oblong, 6.5—12 by 2.5—4 cm, apex obtuse or short obtusely acuminate, acumen 1—2 mm long, base broadly cuneate; margin involute, with a narrow intramarginal nerve; coriaceous, glabrous, with black spots above (always ?) and nitidous, but greyish, whitish and ferruginously tomentose below in different patches *(unde nomen)*; midrib subimpressed above and minutely crested, prominent below, secondary nerves 5—8, ascending at an angle of 80°—90°, curved, indistinctly archingly joined, but mostly diminishing until inconspicuous, prominulous on either side, tertiary nervation transverse, conspicuous above, prominulous below; petioles 0.8—2 cm, grooved above, ferruginously tomentose. Outer *sepals* orbicular, 1.5—2 mm in diam., apex obtuse or retuse, ferruginously tomentose on either side, inner sepals deltoid, 1—1.5

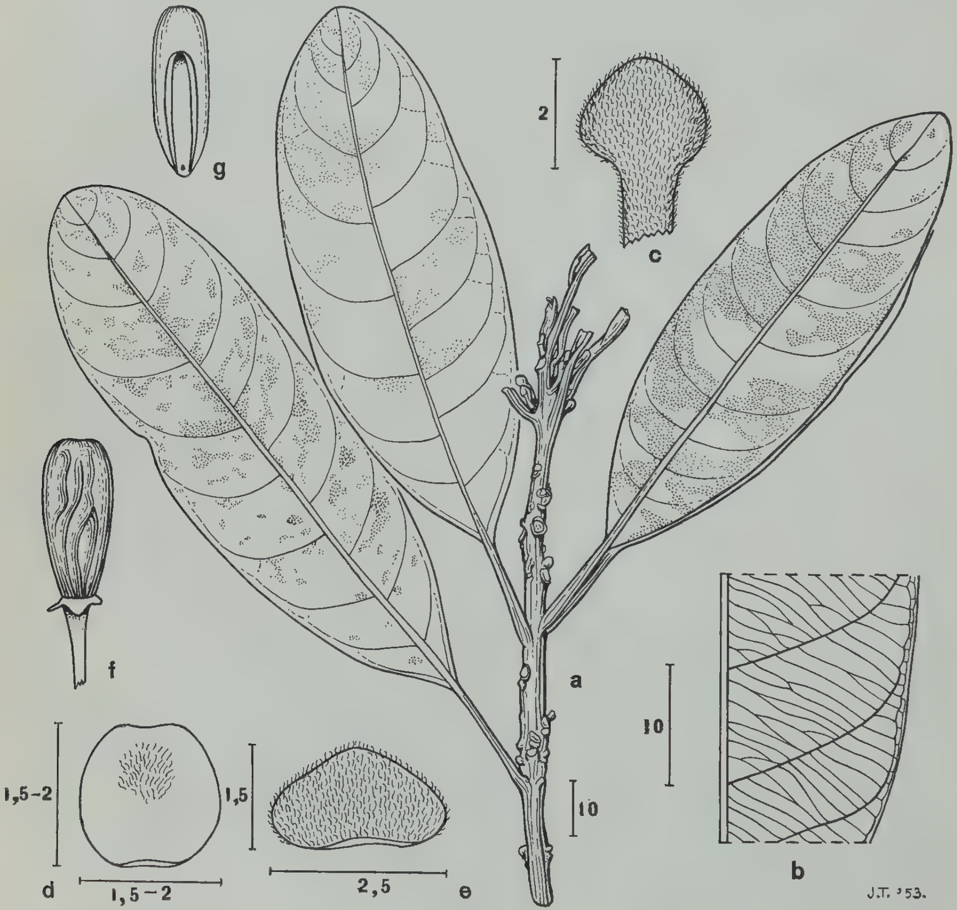


Fig. 28. *P. maculata,* a. habit, b. part of leaf, c. bud, d. inner sepal, inside, e. outer sepal, outside, f. fruit, g. seed. (*Brass & Versteegh 11904*).

by 2—2.5 mm, apex obtuse, ferruginously tomentose on either side. Other details unknown. Pedicel of fruit stout, terete, c. 1 cm long, apex thickened, ferruginously sericeous. *Sepals* in fruit orbicular to subdeltoid, apex obtuse, 1.5—2 by 2—2.5 mm, ferruginously tomentose without, at the inside in the apical part only so. *Fruits* obovoid, 1—1.5 by 0.7—0.8 cm, one-seeded, ferruginously tomentose, pericarp solid, distinctly veined within; seeds obovoid, 0.8—1.2 by 0.7 by c. 0.5 cm, yellowish, nitidous, apex obtuse, base subacute, scar reaching up to $^3/_4$ of length of seed, obovate, 6—9 by 3—4 mm, brownish yellow, embryo unknown.

Type specimen: *Brass & Versteegh 11904* in L.

Distr.: New Guinea.

NEW GUINEA. Western New Guinea, 15 km SW of Bernhard Camp, Idenburgh river, primary forest, on slopes, alt. 1750 m: *Brass & Versteegh 11904* (A, L), fr. Jan., tree 25 m.

Remarks: This species resembles *P. krausei* but has fewer secondary nerves (5—8 against 9—12), a denser tertiary nervation and a wider leaf base, a pubescent lower surface of the leaf, and a wider scar. Also it resembles P. *monticola* but has smaller leaves (6.5—12 cm against (4—)15—19 cm), fewer secondary nerves (5—8 against 12—16) and a shorter petiole (0.8—1.2 cm) against 2—6 cm. Its nearest ally, according to the description, is *P. nebulicola* of which it differs in the fewer secondary nerves (5—8 against 10—17) and the pubescent, mature leaves. The specific epithet *maculata* has been derived from the characteristically spotted, marbled lower surface and to a smaller extent of the upper surface of the leaf. Though flowers and embryo are unknown, on account of the resemblances with the above named species, this new species is inserted in *Planchonella*.

36. P. nebulicola H. J. Lam, Nova Guinea 14, 4, 1932, 563, t. 118 — *Pouteria ? nebulicola* (H. J. Lam) Baehni, 1942, 411.

Trees, 15—36 m. Branchlets terete to angular, 2—8 mm in diam., sparsely whitish pubescent, glabrescent. *Leaves* scattered, obovate-oblong to oblanceolate, 6—21 by 1.8—6.8 cm, apex short obtusely acuminate, acumen 0.5—2 mm, base cuneate, sometimes oblique, shortly decurrent; margin involute, with a narrow intramarginal nerve; coriaceous, ferruginously sericeous below when young, glabrescent; midrib grooved and minutely crested above, strongly prominent below, secondary nerves 10—17, ascending at an angle of c. 80°, near midrib ascending at an angle of 90°—100°, markedly curved near margin and diminishing until inconspicuous, grooved and inconspicuous on either side, tertiary nervation transverse, dense, slender, prominulous on either side but more conspicuous below; petioles slender, 1.2—3.2 cm, narrowly canaliculate above, glabrous. *Flowers* solitary or 2 in each axil, sepals in fruit rotundate. Juvenile fruits globose, glabrous, apex with a short remnant of the style; pedicel up to 1.5 cm long, stout, subglabrous or glabrous.

'Lectotype' specimen: *Ledermann 11337* or *11668* ?

Distr.: New Guinea.

NEW GUINEA. Northeastern New Guinea, Hunstein Peak, alt. 1300 m: *Ledermann 11337*, ex litt.; Schraderberg, alt. 2070 m: *Ledermann 11668*, ex litt.;

Morobe distr., Sattelberg, Sambanga, mountain forest, alt. 1600—1800 m: *Clemens 7834* (A), Dec.; Western Highlands, Al river, Nondugl, alt. 2100 m: *Womersley 5339* (LAE), tree 10 m.

Remarks: The description is for the main part extracted from Lam's description and his figure 18. The specimens mentioned above are inserted with some doubt, as the interpretation of Lam's description caused too many difficulties to prove their definite status.

As I could not trace any of the specimens mentioned by Lam and also the other specimens do not satisfactorily match the description given above it is proposed here to regard, provisionally, Lam's description and plate 118 in his publication as the type 'specimen' until material is found which matches Lam's description more satisfactorily.

37. **P. moluccana** (Burck) H. J. Lam, 1925, 200, 266, f. 55; Lam 1927, 471 — *Sideroxylon moluccanum* Burck, Ann. Jard. bot. Bzg 5, 1886, 19 — *Pouteria moluccana* (Burck) Baehni, 1942, 327.

Trees, 8—35 m. Branchlets terete to angular, 3—8 mm in diam., ferruginously puberulous, glabrescent. *Leaves* subconferted at apex of branchlets or scattered, elliptic, ovate, or obovate to oblong, (3—)8—20(—35) by (1.5—)3—13 cm, in the sterile branches often larger than in the flower bearing branches, apex short obtusely acuminate, acumen 2—8 mm long, base cuneate, decurrent; margin often incurved and waved, with a narrow intramarginal nerve; subcoriaceous, glabrous and nitidous to nitidulous above, sparsely ferruginously pubescent below when young but glabrous and dull when mature; midrib grooved above and minutely crested, stoutly prominent below, in the sterile branches densely ferruginously pubescent below, secondary nerves 7—30, ascending at an angle of 60°—70° (—95°), in fertile branches 7—21, in sterile branches up to 30, strongly curved in the apical nerves, diminishing until inconspicuous. prominulous and grooved above, sometimes minutely crested, tertiary nervation dense, transverse, slender; petioles 2—5(—8) cm, grooved and sometimes with 2 longitudinal ribs above, whitish puberulous, glabrescent. *Flowers* in many-flowered clusters; pedicels terete, up to 2 mm long, whitish to brownish ferruginously pubescent. *Sepals* orbicular to broadly ovate-orbicular, 2—3 by 2—3 mm, apex obtuse, whitish to brownish ferruginously pubescent without, glabrous within, the outer ones subpubescent within near apex. *Corolla* 3—4.5 mm long, lobes quadrangular, c. 2 by 2 mm, apex truncate. *Stamens* 1—1.5 mm long, inserted halfway or slightly higher, filaments subulate, c. 1 mm long, anthers ovoid, c. 0.5 mm long, apex obtuse, dehiscing laterally to extrorsely. *Staminodes* filiform to linear, 1—1.5 mm long, apex truncate. *Gynaecium* subcylindrical, 3—5 mm long, ovary densely ferruginously hirsute, 5-celled; style 5-lobed at apex. *Fruits* green, obovoid, 1.5—2.5 by 1—1.5 cm, 2—4-seeded, apex obtuse, with a short remnant of the style, densely ferruginously woolly, pericarp subligneous, relatively thin; seeds obovoid, 1—1.5 by 0.7—0.9 by 0.6—0.8 cm, obtuse at either end, brown to yellow, nitidous, testa thin, scar about $^2/_3$ the length of the seed, 2—3 mm wide, brownish white, albumen copious, cotyledons foliaceous, radicle cylindrical, slender, 0.5—1.5 mm, apex obtuse, exsert. Pedicel of fruit stout, 3—10 mm long, whitish ferruginously pubescent; calyx 6—9 mm in diam., spreading.

Type specimen: *Teysmann 7819* in BO.

Vern. names: *Celebes,* kalaka, karosisi, kau kear, langsa balu, lepong lepong, pao pao, papakan, lese lese lantjeng puté, tabonga wana, kume koru, kume batu.

Distr.: Java, Celebes, Ceram, Flores, Batjan, Gebeh, Japen, New Guinea.

Java. f. Lam, 1925.

Celebes. near Binuang, Osango, alt. c. 1500 m: *NIFS 28290* (BO, L), June; Pinrang, Letta alt. 1000 m: *NIFS bb 28312* (BO, L), July; Waru Waru: *Kjellberg 2417* (BO, L, S), fr. Oct.

Ceram. Kiandarat, alt. c. 60 m: *NIFS bb 25906* (BO, L), Aug.

Flores. f. Lam, 1925.

Gebeh. without loc.: *Teysmann 7819* (BO, L).

Japen. Mt. Djawarari, alt. c. 1000 m: *NIFS bb 30231* (BO, L, SING), fl. July.

New Guinea. Western New Guinea, 15 km SW of Bernhard Camp, Idenburg river, alt. 1770 m, primary forest on slope of ridge: *Brass & Versteegh 11965* (A, L), tree 16 m, fr. green, Jan.

Remarks: This species is closely related to *P. firma,* but differs from that species in the glabrous inner side of the calyx and the sessile or subsessile flowers. As much of the material is sterile a reliable identification is impossible, so some of the specimens cited above might belong to *P. firma.*

38. P. macropoda H. J. Lam, Nova Guinea 14, 4, 1932, 563, t. 117 — *Pouteria ? macropoda* (H. J. Lam) Baehni, 1942, 410.

Trees, 15—20 m. Branchlets stout, terete to irregularly angular, 6—9 mm in diam., blackish, whitish or ferruginously puberulous. *Leaves* scattered, ovate to ovate-elliptic or oblong, 10—32(—45) by 4—11(—16.5) cm, apex short obtusely acuminate, acumen 3—10 mm long, base cuneate and subabruptly narrowed and sometimes oblique, shortly decurrent; with a narrow intramarginal nerve, often bullate; coriaceous, nitidous above, nitidulous below, but brownish puberulous when young and glabrescent; midrib impressed above and narrowly crested, stoutly prominent below, secondary nerves 14—29, ascending at an angle of 60°—90°, curved in the apical nerves, straight and markedly curved at tip only in the other nerves, diminishing until inconspicuous, grooved above, prominent below, tertiary nervation transverse, prominulous on either side but more conspicuous below; petioles 2—5.5 cm long, flat or grooved above, base widened, sparsely whitish puberulous, glabrescent. *Flowers* white, in many-flowered clusters; pedicels slender, 1.3—1.8 cm, thickened and solid in fruit and then up to 2.3 cm long, glabrous. *Sepals* subrotundate to orbicular, 3—5 by 3.5—4.5 mm, apex obtuse or short obtusely acuminate, ferruginously sericeous without, glabrous within, inner sepals glabrous at outside, and outer sepals glabrescent at outside, inner ones smaller than outer ones and sometimes subcarinate. *Corolla* 5—6.5 mm long, lobes spatulate, 2.5—3.5 by 2—2.5 mm. *Stamens* 2—2.5 mm long, inserted slightly below the middle, filaments terete or angular, c. 1.5 mm long, anthers ovoid, 1—1.5 mm long, apex obtuse, emarginate, connective thickened, dehiscing laterally. *Staminodes* lanceolate, 1.5—2 mm, apex acute, obtuse or with 2 or 3 obtuse tips, often crested, margins sometimes involute. *Ovary* narrowly conoid, 4—5 by 1—1.5 mm, ferruginously hispidulous, disk developed as 5 bundles of ferruginous hirsute hairs; style stout, tapering into ovary, c. 3.5 mm long. *Fruits* greyish green, ovoid to subglobose or narrowly obovoid, 1—4 by 0.8—2.5 cm, 1—3-seeded, with a short remnant of the style, glabrous except for a ring of ferruginous hairs at the base, nitidous, pericarp thin, crustaceous, scar linear, nearly as long as the seed, 1—4 mm wide, reddish brown, dull, albumen copious, cotyledons foliaceous, radicle stout, cylindrical, 2—3 mm long, obtuse, exsert.

Type specimen: *Ledermann 11657* in B.

Neotype specimen: *Carr 13631* in L.

Distr.: New Guinea.

Remarks: The flower is described from *Brass & Versteegh 11139* in Leiden. Details of the flower of var. *multinervis* are not known.

As the type specimen in the Berlin herbarium has been destroyed and no duplicates turned up it became necessary to indicate a neotype specimen.

Var. **macropoda.**

Leaves 10—20 by 4—8.5 cm; secondary nerves 14—18, ascending at an angle of 60°—75°. *Fruits* 1—2.2 by 0.8—1.5 cm. Scar of seeds 8—15 by 1 mm.

Type specimen: *Ledermann 11657* in B.

Neotype specimen: *Carr 13631* in L.

Distr.: New Guinea.

New Guinea. Western New Guinea, Bele river, 18 km NE of Lake Habbema, alt. 2200 m: *Brass & Versteegh 11139* (A, L), tree 31 m, fl. white, Nov. — Northeastern New Guinea, Morobe distr., Samanzing, alt. 2300 m: *Clemens 9431* (B), fr. Dec.; Wau, high country above the village: *Jacobs 64* (LAE), July; Sutherlands Camp, Kaindi, alt. 2400 m: *McAdam 235* (BRI, LAE), tall tree 36 m, juv. fr. plum-coloured; Sattelberg, Sambanga, alt. c. 1900 m: *Clemens 7652* (A, B), fr. Nov.; Schraderberg, alt. 2070 m, mossy forest: *Ledermann 11657*, tree 15—20 m, fr. May, *ex litt.*; Aiyura, in rainforest, alt. c. 1800 m: *L. S. Smith NGF 1038* (BRI, LAE), tree 40 m. — Southeastern New Guinea, Alola, alt. 2000 m, rainforest: *Carr 13631* (BM, L, SING), fr. grey-green, suffused purple, Dec.

Remarks: *Brass 3433* from the Solomons is regarded by Lam, Blumea 5, 1, 1942, 11, as *P. macropoda* but the inside of the calyx bears a ferruginous tomentum and therefore this specimen belongs to *P. firma* var. *firma.* The pubescence of the fruit also is similar to that of *P. firma.*

Var. **multinervis** van Royen, nov. var. — *Pag. 430.*

Leaves 25—32 by 7—11 cm; secondary nerves 19—29, ascending at an angle of 80°—90°. *Fruits* 3—4 by 1—2.5 cm. Scar of seeds c. 30 by 4 mm large.

Type specimen: *Clemens 8938* in A.

Distr.: New Guinea.

New Guinea. Northeastern New Guinea, Samanzing, alt. 2000 m: *Clemens 8938* (A, B), tree, fr. wine purple, Oct.

Remarks: Unfortunately no flowers are known of this variety but as the other details match up in many respects *P. macropoda* it is inserted here.

39. **P. monticola** (Krause) H. J. Lam, Nova Guinea 14, 4, 1932, 561, t. 112 — *Sideroxylon monticolum* Krause, Engl. Bot. Jahrb. 58, 1923, 481 — *Pouteria monticola* (Krause) H. J. Lam, Blumea 5, 2, 1943, 337.

Trees, 20—30 m. Branchlets subterete to angular, 3—5 mm in diam., ferruginously tomentose, glabrescent and then greyish and dull. *Leaves* mostly conferted near apex of branchlets but also scattered, obovate-oblong or oblong-lanceolate, or ovate or elliptic, 4—19(—26) by 2.5—5(—6) cm, apex obtusely or acutely acuminate, acumen 1—5 mm long, base broadly cuneate, decurrent; margin subinvolute, with a narrow intramarginal nerve; coriaceous, nitidulous and sparsely ferruginously pilose above, glabrescent, densely ferruginously sericeous below; midrib impressed and minutely crested above, prominent below, secondary nerves 12—20, ascending at an angle of 70°—90°, straight but curved at their tips, diminishing until inconspicuous, prominulous on either side but more conspicuous below, impressed above and minutely crested, tertiary nervation transverse, prominulous and inconspicuous on either side; petioles 2—6 cm long, grooved above, ferruginously sericeous. *Flowers* white or creamy, ♀ or ⚥, in few-flowered clusters or solitary; pedicels 1—2.2 cm long, ferruginously sericeous. *Sepals* ovate or ovate-orbicular, 3—4 by 3—3.5 mm, apex subacute, ferruginously tomentose at the outside, glabrous at inside. *Corolla* 4—5 mm long, lobes ovate-oblong, c. 2 by 1.5 mm, apex rounded to truncate or retuse. *Stamens* c. 1.5 mm long, inserted in the basal third to half, some reduced to narrow lobes, filaments subulate, c. 1 mm long, anthers oblong, 0.5—1 mm long, apex obtuse, mucronate, dehiscing laterally. *Staminodes* orbicular or ovate-lanceolate, 1—1.5 mm long, lobate crenulate along margin. *Ovary* globose or subglobose, 1—1.5 by 1—1.5 mm, ferruginously hirsute, 5-celled; style cylindrical, 2—4 mm long, 5-ribbed, capitate. *Fruits* unknown.

Type specimen: *Ledermann 10246* in B.

Neotype specimen: *Carr 15189* in L.

Vern. names: papa, paba.

Distr.: New Guinea.

NEW GUINEA. Northeastern New Guinea, Sepik region, in mountain forest, alt. 1000 m: *Ledermann 10246,* fl. white, Dec. *ex litt.*; Morobe distr., above Andarora, alt. 1700—1900 m, forest: *Blackwood 89* (K), shrub; above Ekna village, alt. 1400—1600 m: *Blackwood 258* (K), small tree — Southeastern New Guinea, Alola, forest, alt. 2000 m: *Carr 13624* (BM, L, SING), tree c. 26 m, fl. Dec.; ibidem: *Carr 14158* (BM, L, SING), tree 30 m, fl. Jan.; Uniri river, forest, alt. c. 2200 m: *Carr 15189* (L, SING), tree c. 22 m, fl. white, Jan.

Remarks: The secondary nerves in this species are of a similar type as those of *P. rigidifolia* but the tertiary nervation is transverse instead of being reticulate-parallel. On the whole *P. monticola* has longer pedicels and the length of the latter is only slightly shorter than those of *P. brownlessiana, P. singuliflora* and *P. ralphiana* to which three species *P. monticola* also is closely related. The glabrous inner surface of the sepals this species has in common with such species as *P. nebulicola P. macropoda* and *P. moluccana.* The densely ferruginous pubescence of the ovary shows the affinity of this species to *P. firma, P. foxworthyi, P. sussu* and *P. lamprophylla,* etc.

In *Blackwood 89* the leaves are up to 26 by 6 cm large and as it has been stated that the plant is a shrub, the juvenile plants seem to have larger leaves than the mature trees.

As the type specimen in the Berlin herbarium has been destroyed and no duplicates turned up, *Carr 15189* in Leiden has been chosen as a new type specimen.

40. **P. hochreutineri** H. J. Lam, Boissiera 7, 1943, 92—94, f. 5 — *Pouteria hochreutineri* (H. J. Lam) H. J. Lam, Blumea 5, 2, 1943, 337.

Trees, 25—45 m. Branchlets subterete or angular, 4—6 mm in diam., glabrous. *Leaves* subconferted at apex of branchlets, elliptic-oblong or obovate, 9—18 by 3.5—10 cm, apex obtuse or short obtusely acuminate, acumen 1—4 mm long, base broadly cuneate, decurrent; with a narrow intramarginal nerve, bullate; coriaceous, glabrous above, yellowish, greyish or whitish tomentose below; midrib grooved above and minutely crested, prominent below, secondary nerves 13—15, ascending at an angle of 70°—80°, curved, indistinctly archingly joined or diminishing until inconspicuous, impressed above, prominent below, tertiary nervation transverse, descending near midrib, inconspicuous above, prominent below; petioles canaliculate above, 2—4 cm long, glabrous. *Flowers* pink or red, in many-flowered clusters or markedly prominent tuberculae below the leaves; pedicels angular, 8—10 mm, sparsely ferruginously sericeous. *Sepals* ovate to triangular, 3—4.5 by 3—4.5 mm, apex obtuse or subacute, sometimes crested, sparsely whitish or ferruginously pubescent at outside, glabrous at inside, margin sometimes ciliate. *Corolla* 5—9 mm long, lobes broadly oblong, 4—6.5 by 3—4 mm, apex rounded, sometimes ciliate along margin. *Stamens* 4—8 mm long, inserted in the basal third, filaments ribbon-shaped, 3—6 mm long, thick, S-shaped in bud, anthers sagittate-ovoid, 1.5—2 mm long, apex acuminate or acute, dehiscing extrorsely or laterally. *Staminodes* petaloid, narrowly deltoid to sagittiform, 2—3.5 by 1—2 mm, apex acute. *Ovary* ovoid, sometimes oblique, apex tapering into styles, 2—3 by 2—3 mm, densely ferruginously puberulous, 5-celled, 5-lobed; style stout, cylindrical, 2—3.5 mm long, 5-stigmate. *Fruits* unknown.

Type specimen: *Carr 13023* in L.

Distr.: New Guinea.

NEW GUINEA. Southwestern New Guinea, Boridi, forest, alt. c. 1400 m: *Carr 13023* (BM, L, SING), fl. Sept.; ibidem, Isuarava, forest, alt. c. 1600 m: *Carr 15404* (BM, L, SING), fl. Febr. — Northeastern New Guinea, Morobe distr., Lae, area between Busu and Bupu rivers: *Williams NGF 125* (LAE), tree c. 45 m.

Remarks: This species is characterized by the large, petaloid staminodes and the clusters of flowers below the leaves. Its nervation is less dense and tends to be more parallel to the secondary nerves than the species described hitherto in this group.

41. **P. vrieseana** (Burck) Dubard, 1912, 59 — *P. vrieseana* ('Burck') Dubard, H. J. Lam, 1925, 198; H. J. Lam, 1927, 467, f. 27 — *Sideroxylon vrieseanum* Burck, Ann. Jard. bot. Bzg 5, 1886, 18 — *Pouteria vrieseana* (Pierre) Baehni, 1942, 336.

Trees, up to 36 m. Branchlets thick, stout, 5—13 mm in diam., solid or hollow, ferruginously puberulous or woolly. *Leaves* scattered, obovate, 17—46 by 6—21 cm, apex rounded or short obtusely or acutely acuminate, acumen 3—12 mm long, tapering towards base and decurrent; margin sometimes waved, with a narrow intramarginal nerve; membranous or coriaceous, juvenile leaves ferruginously villous or woolly on either side, later below only, ultimately glabrous on either side; midrib grooved above and sometimes crested, prominent below, secondary nerves (14—)20—27(—40), ascending at an angle of 60°—70°, straight, curved at their tips and diminishing until inconspicuous or archingly joined by an incrassate tertiary nerve, in the juvenile leaves sometimes curved, prominulous above, prominent below, tertiary nervation transverse, slender and prominulous above, prominent below; petioles 0.8—2.5 cm long, canaliculate above, ferruginously puberulous or woolly. *Flowers* in many-flowered clusters which usually contain open adult ones and very young ones; pedicels slender, terete, 7—9 mm long in young flowers, 2—4.5 cm long in the open ones, ferruginously puberulous or woolly. *Calyx* 5- or 6-lobed, 5—6 mm long, lobes deltoid, c. 4 by 4 mm, apex rounded, ferruginously pubescent without, glabrous within. *Corolla* 6—12 mm, lobes elliptic-oblong, 5—6.5 by 2—2.5 mm, apex obtuse. *Stamens* 8—10.5 mm long, inserted in the basal fourth, exsert curved outwards but not curved in juvenile flowers, filaments filiform, 6—8.5 mm long, anthers ellipsoid, but deltoid when young, 1.5—2 by c. 1 mm, apex obtuse, dehiscing laterally. *Staminodes* lanceolate and crested within, or subulate, 3—3.5 mm long, apex acute, base widened. *Ovary* narrowly conoid, c. 1.5 by 0.5 mm, reddish ferruginously hirsute, disk free, consisting of a ring of ferruginous hairs; style subulate or filiform, 3—6 mm long, longer exsert after the corolla has fallen off than during anthesis. *Fruits* ellipsoid, 2—5-angular, 5.5—6.5 by 2—4.5 cm, 1—5-seeded, apex rounded or acute, with a small remnant of the style, ferruginously puberulous; pedicels 4—6 by 0.3—0.4 cm, glabrous; calyx 5—10 mm in diam.; pericarp ligneous, rather solid; seeds obliquely fusiform, laterally compressed, 4—4.5 by 1.5—1.8 by 0.8—1.3 cm, apex subacute, base acute, brown, nitidous, scar as long as seed, oblong-obovate, 2—4 mm wide, light brown, dull, testa hard and thick, albumen copious, cotyledons thin, radicle conoid-oblong, 3—4 mm long, obliquely inserted, long exsert.

Type specimen: *de Vriese 42* in L.

Vern. names: *Nufur,* mopin; *Halmahera,* latoko; *Ceram,* singanatan, bitaule; *Aru,* apanai; *Amboina,* arupah putih.

Use: The wood is soft and is used for planks and beams but must be protected from the weather.

Distr.: Batjan, Obi, Ceram, Bisa, Amboina, Aru, Buru, Halmahera, Morotai.

Batjan. without known loc.: *de Vriese 42* (= *Teysmann 5881 ?*) (BO, L, U), fl. & fr.

See for the other localities Lam 1925 and 1927.

Remarks: Burck, Baehni and Lam mention *Teysmann 5881* as the type specimen but it seems that *de Vriese 42* is the right number. The type specimen in Leiden indicates that it was sent from Utrecht to Bogor as no *5881,* and subsequently with this number was sent to Leiden. Moreover, to the same sheet a label is stuck of de Vriese bearing in Burck's handwriting the name *Sideroxylon vrieseanum* and the number 42, also indicating that it had been collected on Batjan.

This species together with the three following form a small group characterized by large fruits — mostly longer than 4 cm —, by the large number of flowers in each cluster and also by the large leaves which are dark above when dry and lighter coloured below. The free disk in *P. vrieseana* is rather striking, consisting of a ring of reddish ferruginous hairs, while in *P. kaernbachiana* and *P. anteridifera* this disk is completely adnate to the ovary.

42. P. kaernbachiana (Engler) H. J. Lam, 1925, 200; idem, Nova Guinea 14, 4, 1932, 561, t. 110 — *Sideroxylon kaernbachianum* Engler, Notizbl. Berlin 1, 1895, 102 — *Pouteria ? kaernbachiana* (Engler) Baehni, 1942, 338.

Trees, up to 30 m. Branchlets terete or angular, 5—13 mm in diam., solid, densely ferruginously or greyish-blackish tomentose. *Leaves* scattered, spatulate or obovate, 15—28 by 5.5—12 cm, apex obtuse or short obtusely acuminate, base narrowly cuneate, shortly decurrent; margin undulate, with a narrow intramarginal nerve; chartaceous or coriaceous, greyish or greyish-blackish tomentose, glabrescent except along midrib and secondary nerves, rest of surface nitidulous; midrib shallowly grooved above, prominent below, secondary nerves 11—22, ascending at an angle of 40°—75°(—90°), straight or curved near margin, distinctly archingly joined, prominulous above, prominent below; petioles 1—2 cm long, flat above or slightly grooved, rounded below, greyish-blackish or ferruginously tomentose. *Flowers* light green, in many-flowered clusters in axils of leaves or scars, ♀ and ⚥; pedicels 5—11 mm long, angular, yellowish ferruginously tomentose. *Sepals* broadly ovate-triangular, 2.5—5 by 3—4 mm, apex obtuse or subacute, ferruginously tomentose on either side except within in the basal part, margin of inner sepals laciniate-fimbriate. *Corolla* 5—8 mm long, glabrous, lobes oblong or oblanceolate, 3—4 by 2—3 mm, apex obtuse. *Stamens* 5—6.5 mm, inserted in the middle, in bud pendulous, filaments subulate, 4—5.5 mm long, twisted, anthers sagittate-cordate, c. 1.5 mm long, apex acute or acuminate, dehiscing laterally. *Staminodes* lanceolate, 1.5—2 mm long, apex acute, base acutely or obtusely dentate or irregularly widened only, crested within. *Ovary* ovoid, 1—1.5 mm in diam., tapering into style, 5-lobed, 5-celled, densely hirsute, disk adnate, irregularly lobed, yellowish ferruginously hirsute; style 4—5 mm long, ribbed. *Fruits* green, ellipsoid, sometimes laterally compressed, 6.5—8 by 2.5—4 by 2—2.5 cm, 2-seeded, apex obtuse or acute, or obtusely or acutely acuminate, black, glabrous, sometimes with a few scattered ferruginous hairs, pericarp thick, fleshy; seeds obliquely ellipsoid, c. 5 by 2 by 1.5 cm, acute or acuminate at either end, flat at the side of the scar, brown, nitidous, scar as long as seed, c. 7 mm wide, blackish or brownish, albumen copious, cotyledons foliaceous, radicle cylindrical, c. 7 mm, obtuse, exsert.

Type specimen: *Kaernbach 19* in B.
Neotype specimen: *Carr 15562* in L.
Vern. name: nigu.
Use: The very sticky latex is used by the natives as bird-lime.
Distr.: New Guinea.

NEW GUINEA. Northeastern New Guinea, Morobe distr., Sattelberg, alt. c. 1200 m: *Clemens 2030* (L), fr. March; Finschhafen: *Kaernbach 19, ex litt.*; Aitape distr., a few miles SE of Tadji Airstrip near Aitape, alt. 8 m: *L. S. Smith NGF 1194* (LAE), fr. Jan.; Lae area: *NGF 910* (LAE), fl. Oct.; ibidem: *NGF 999* (LAE), fl. June — Southeastern New Guinea, Isuarava, alt. c. 1600 m, secondary forest:

Carr 15372 (BM, L, SING), fl. Febr.; ibidem: *Carr 15373* (L, SING), fr. Febr.; ibidem: *Carr 15420* (BM, L, SING), fl. Febr.; ibidem: *Carr 15562* (BM, L, SING), tree c. 30 m, fr. green, Febr.

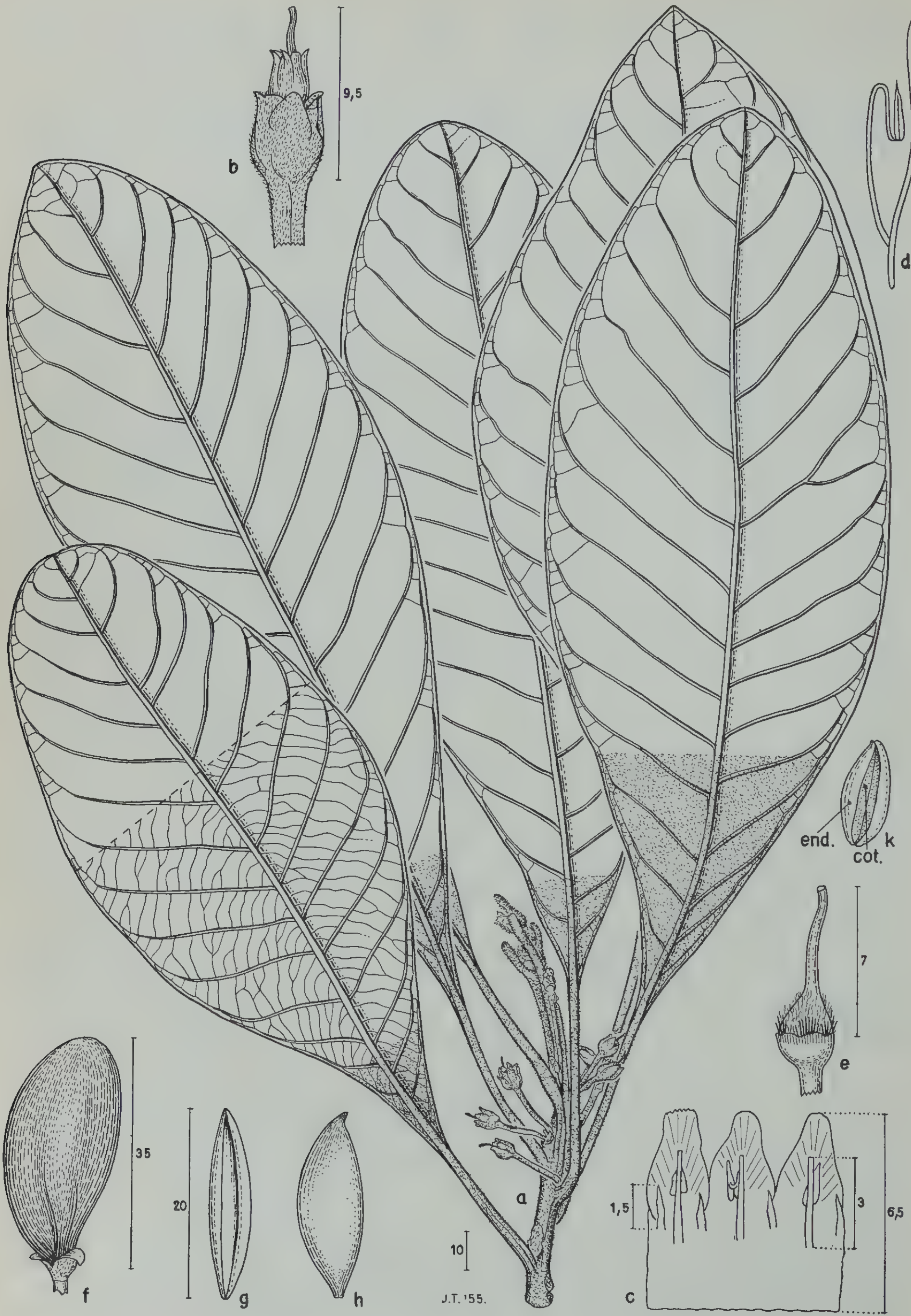
Remarks: As the type specimen in the Berlin herbarium has become lost it became necessary to choose a neotype, for which *Carr 15562* in Leiden is chosen. As the latter has fruits only, for the flowers *Carr 15420* in Leiden can be used as 'type specimen' for the flowers.

In 1932, Lam supposed that this species is very closely related — if not identical with — *P. vrieseana* and indeed it is quite difficult to identify the status of some sterile specimens. However, there is a difference in the number of secondary nerves, viz. 11—22 in *P. kaernbachiana* and 14—20 in *P. vrieseana*. Moreover, though the material of *P. kaernbachiana* is still scarce, it is found that the pedicels are shorter than those of *P. vrieseana*, viz. 0.5—1.1 cm in fully expanded flowers of *P. kaernbachiana* and 2—4.5 cm in *P. vrieseana*. In bud the pedicels in *P. vrieseana* are 7—9 mm long, thus within the limits of the length of the pedicels of the mature flowers of *P. kaernbachiana*. Also on the whole the flowers of *P. vrieseana* are larger — calyx 9—10 mm against 2.5—5 mm, corolla 6—12 mm against 5—8 mm — and the staminodes are fleshy at the base in *P. vrieseana*, but membranous in *P. kaernbachiana*, their form in *P. vrieseana* being subulate or 3-winged, and sublanceolate with 1 or 2 small teeth at the base in *P. kaernbachiana*. The stamens in *P. kaernbachiana* bear a short mucro, those in *P. vrieseana* are obtuse. The ovary in *P. kaernbachiana* is on the whole more glabrous than in *P. vrieseana* and the hairs which form the disk are longer and hispid. The main difference, however, is the free disk in *P. vrieseana* and the completely adnate disk in *P. kaernbachiana*. In the fruits distinct differences are present which distinguishes this species from *P. moluccana*. Lam in 1925 supposed that these two species were conspecific but the fruit of *P. moluccana* is obovoid, densely ferruginously woolly and much smaller (1.5—2.5 by 1—1.5 cm against 6.5—8 by 2.5—4 cm), while the fruit of *P. kaernbachiana* is ellipsoid and glabrous. Also in their distribution there is a difference, *P. kaernbachiana* being restricted to the eastern parts of New Guinea and *P. moluccana* is found only in the Moluccas and the western parts of New Guinea.

Baehni compares *P. kaernbachiana* with *Pouteria forbesii* (Lam) Baehni (= *Krausella forbesii* (Moore) H. J. Lam), but *Krausella forbesii* has a distinct gynophore, a feature not present in *Planchonella* sensu Dubard nor in *Pouteria* sensu Eyma.

43. **P. cyclopensis** van Royen, nov. sp. — *Pag. 430 and fig. 29.*

Trees, c. 25 m. Branchlets thick, stout, 5—10 mm in diam., angular, solid, ferruginously puberulous or woolly. *Leaves* scattered, elliptic or subobovate, 17—27 by 7—13 cm, apex obtuse, retuse or short obtusely or acutely acuminate (acumen 1—3 mm), tapering towards base and shortly decurrent; margins sometimes waved, with a narrow intramarginal nerve; coriaceous, juvenile leaves ferruginously villous on either side, mature ones glabrous above except greyish tomentose along midrib and nerves and some scattered hairs below, ferruginously tomentose, but woolly on midrib and nerves; midrib crested above but in the basal part flat, prominent below,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secondary nerves 12—16, ascending at an angle of 60°—70°, straight or curved, sometimes only so at the tips, archingly joined, prominulous above, prominent below, tertiary nervation transverse, slender and inconspicuous above, prominent below; petioles 3—5 cm, flat above, ferruginously tomentose or sericeous. *Flowers* in 1—8-flowered clusters; pedicels angular, stout, 12—16 mm, ferruginously and greyish tomentose or sericeous. *Calyx* 5- or 6-lobed, 5—6 mm, lobes deltoid, 3—4 by 3—4 mm, obtuse, ferruginously pubescent without, whitish so within. *Corolla* 6—7.5 mm, lobes elliptic-oblong, c. 3.5 by 2 mm, subtruncate. *Stamens* 5.5—6 mm, inserted in the basal fourth, filaments filiform, 4—4.5 mm, curved outward and downward in the apical fourth and its top curved upward again, anthers sagittate, c. 1.5 mm, apex mucronulate, dehiscing laterally. Staminodes subulate or lanceolate, c. 1.6 mm, acute. *Ovary* ovoid, c. 2 by 2.5 mm, pale ferruginously hirsute, disk adnate, consisting of 5 bundles of ferruginous hirsute hairs; style filiform, 5—6 mm, but accrescent. *Fruits* obliquely obovoid, 2—4 by 1.5—2 by 1—2 cm, one-seeded (always ?), with scattered groups of pale ferruginous hairs, pericarp fleshy; seed fusiform, laterally compressed, 2.2 by 1 by 0.7 cm, apex acute, base obtuse, scar as long as seed, oblong, c. 2.5 mm wide, greyish, testa hard, albumen copious, cotyledons thin, radicle unknown.

Type specimen: *van Royen 3770* in L.

Distr.: New Guinea.

NEW GUINEA. Western New Guinea, distr. Hollandia, Cycloop Mountains near Hollandia, path Ifar-Ormoe, crossing the Jaboe river, alt. 920 m, primary forest: *van Royen 3770* (L), tree c. 25 m, fl. creamy, later red, fr. light green, buttresses c. 1.5 m high, rather common up to 1040 m alt.

Remarks: The specific epithet has been derived from the Cycloop Mountains where this species was found to form a major part of the forests between 900 and 1040 m, locally together with *Nothofagus sp.*

This species is closely related to *P. vrieseana, P. anteridifera* and *P. kaernbachiana.* The main difference between *P. cyclopensis* and these species is the stout pedicel which is slender and filiform in the other three. From *P. vrieseana* it differs in the smaller number of secondary nerves, 12—16 against 20—27, in the longer petioles, 3—5 cm against 0.8—2.5 cm, and in the tomentose inner side of the sepals which are glabrous within in *P. vrieseana.* From *P. anteridifera* it differs in the shorter pedicels, 12—16 mm against 15—25 mm, in the olivaceous brown upper surface of the leaves against blackish and in the anthers which are entire at their tips and in *P. anteridifera* are provided with two acute tips. A minor detail, though probably not altogether reliable, are the solid branches in *P. cyclopensis,* which are hollow in *P. anteridifera.* From *P. kaernbachiana* it differs in the longer pedicels, 12—16 mm against 5—11 mm, and in the smaller fruits, c. 4 by 2—5 cm against 6.5—8 by 2.5—4 cm.

The four species mentioned above show a striking feature in that their

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Fig. 29. *P. cyclopensis,* a. habit, b. flower, c. corolla, inside, d. schematic drawing of insertion of stamen, e. pistillum, f. fruit, g. frontal view of seed, h. lateral view of seed, k. transverse section of embryo. (*van Royen 3770*).

stamens are incurved in bud. This detail separates them from the other species in the *firma*-group.

44. P. anteridifera (White & Francis) H. J. Lam, 1927, 471; Lam, Nova Guinea 14, 4, 1932, 562, t. 116 — *Sideroxylon anteridiferum* White & Francis, Proc. Roy. Soc. Qld 38, 1927, 252, f. 15 — *Pouteria anteridifera* (White & Francis) Baehni, 1942, 381.

Trees, up to 45 m. Branchlets angular, 5—14 mm in diam., hollow, densely blackish, greyish or ferruginously pilose or velutinous. *Leaves* scattered, obovate-elliptic, (15—)25—45 by (9—)13—19 cm, apex obtuse or short obtusely acuminate, acumen 4—7 mm long, base cuneate or rounded and sometimes unequal, shortly decurrent; margin undulate, with a slightly thickened intramarginal nerve; chartaceous, glabrous above except whitish or ferruginously puberulous along midrib and secondary nerves, but sometimes sparsely so over the whole surface and glabrescent, nitidous above, densely ferruginously puberulous below; midrib shallowly grooved and often minutely crested above, distinctly prominent below, secondary nerves 11—19, ascending at an angle of 55°—70°, but 80°—90° in the basal part, straight or slightly curved but stronger so near margin, diminishing until inconspicuous near margin or archingly joined, but this sometimes in apical part of leaf only, minutely crested above, prominent below, tertiary nervation transverse, recurved near midrib, prominulous on either side, but more conspicuous below; petioles 0.6—6 cm long, flat above, rounded below, greyish or ferruginously puberulous. *Flowers* in many-flowered clusters borne by ferruginously puberulous tuberculae; pedicels 1.5—2.5 cm long, terete or angular, ferruginously velutinous. *Sepals* ovate, 4—4.5 by 3—3.5 mm, apex obtuse, ferruginously puberulous on either side. *Corolla* 6—7 mm long, lobes lanceolate-oblong, 2.5—3.5 by 1.5—2 mm, apex obtuse. *Stamens* 7—8 mm long, inserted in the basal third, curved inwards or outwards when young, filaments filiform, 6—7 mm long, anthers ovoid, 1.5—2 mm long, apex with 2 acute teeth, dehiscing laterally. *Staminodes* 2—3 mm long, lanceolate, sometimes subulate, often crested within, sometimes with a single, or a few small teeth along margin, base widened. *Ovary* subglobose, 2—2.5 mm high and in diam., apex ferruginously hispidulous, irregularly 5-lobed, 5-celled, disk adnate, irregularly lobed, yellowish ferruginously hispidulous; style 5-sided, 5—7 mm long, slightly sunk into ovary. *Fruits* green, obovoid or ellipsoid, the one-seeded fruits often oblique, 4.5—7.5 by 1.8—3.2 cm, 1- or 2-seeded, glabrous, pericarp red, fleshy; seeds ellipsoid, flat at one side, 4—4.5 by 1.5—1.8 by 0.6—0.7 cm, acute at either end, brown, nitidous, scar nearly as long as seed, 2—4 mm wide, brownish, dull, testa woody, embryo unknown.

Type specimen: *Lane-Poole 161* in BRI.

Vern. names: ocko-woru (Bougainville); pako, sorika (New Guinea).

Distr.: New Guinea and Solomons.

NEW GUINEA. Northeastern New Guinea, Morobe distr., Lae, alt. 8 m, rainforest: *White c.s. NGF 1535* (BRI), fl. & fr. July; Trans Busu Area, east of Lae, in Anisoptera forest, alt. c. 180 m: *van Royen 4172* (L), tree 33 m, fl. reddish pink, fr. black, June; Labu, north of Lae, swampy forest: *Womersley 3225* (LAE), fl. & fr. July; Salamaua, rainforest: *Williams NGF 154* (BRI), tree c. 45 m, fr. Jan. — Southeastern New Guinea, Buna: *Lane-Poole 161* (BRI), fl.; Buna Hinterland, c. 15 km N of Embi Lakes, alt. 50 m, rainforest: *L. S. Smith NGF 1259* (BRI, L), fr. March; Koitaki, alt. 500 m: *Carr 12607* (BM, L, SING), tree c. 26 m, lvs dark green above, brown beneath, latex white, fl. June; ibidem: *Carr 12608* (BM, L, SING), fr. green; Sogeri: *Heather 2838* (L, LAE); Bumbuarea, alt. 50 m: *Vickery NGF 1398* (BRI, L, LAE), tree c. 45 m, fl. & fr. July; near Pitoki village, c. 3 km S of Kokoda Station, in partly cut rainforest, alt. c. 400 m: *Hoogland 3980* (L), tree c. 35 m, fr. Sept.

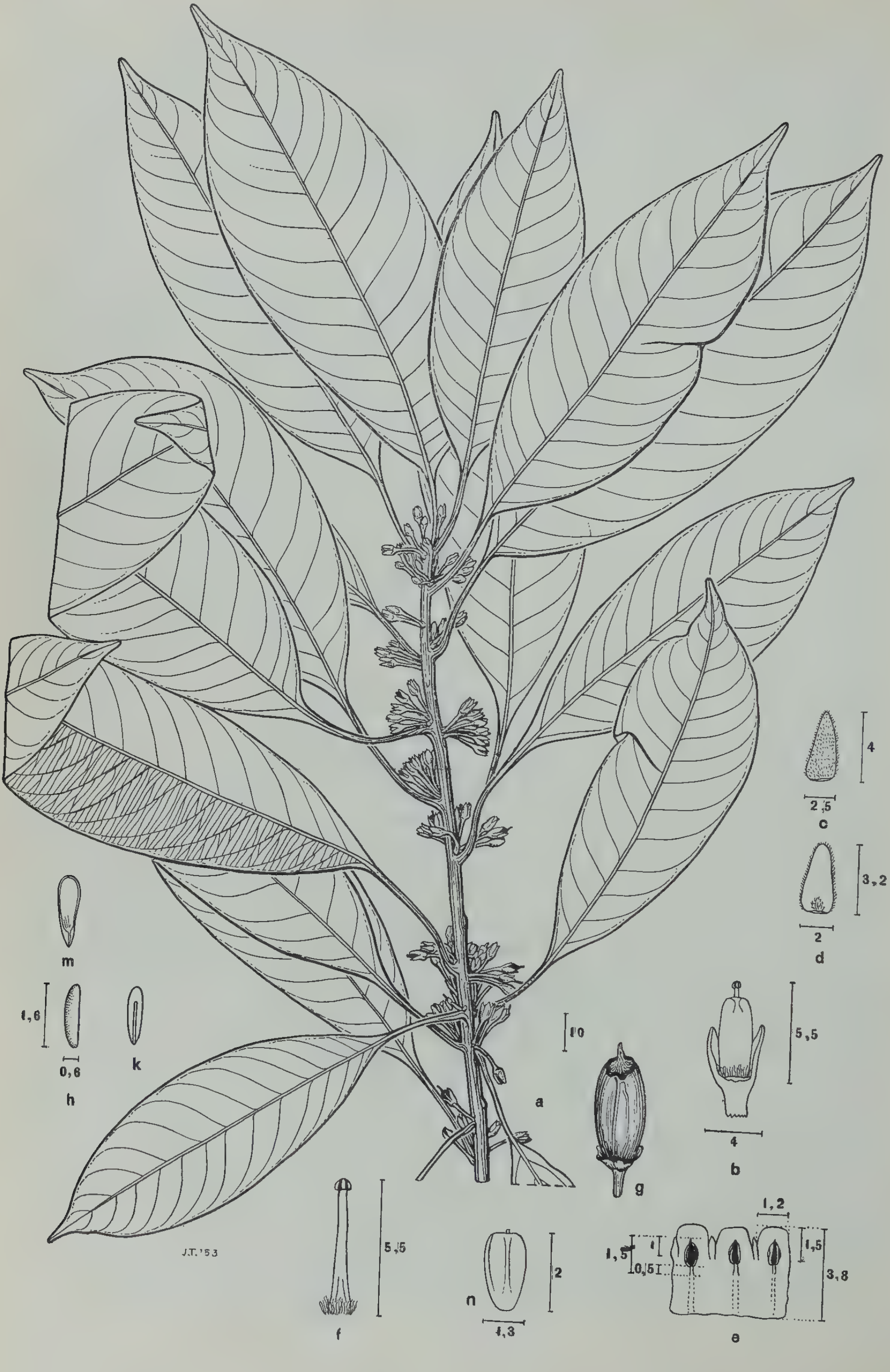
Solomons. Bougainville, Kugumara, Buin, alt. 150 m, rainforest: *Kajewski 1903* (SING), large tree up to 25 m, fr. growing single on stems with milky sap and red fleshy seeds, July.

45. P. xerocarpa (F. v. M. ex Bentham) H. J. Lam, 1925, 218 — *Achras xerocarpa* F. v. M. ex Bentham, Fl. Austr. 4, 1869, 281 — *Sideroxylon xerocarpum* (F. v. M. ex Bentham) Bentham, Bentham & Hooker f., Gen. Pl. 2, 1876, 655; F. v. M., Syst. Census, 1882, 91; Baehni, 1942, 428 — *Sersalisia xerocarpa* (F. v. M. ex Bentham) Domin, Bibl. Bot. 89, 1928, 1062 — *Fig. 30.*

Trees, 6—23 m. Branchlets terete, 1—3 mm in diam., striate, ferruginously or greyish sericeous. *Leaves* scattered, elliptic-lanceolate or obovate, 9—16 by 2.5—5 cm, apex long obtusely acuminate, acumen 2—7 mm long, base subabruptly narrowed, cuneate, tapering; with a narrow intramarginal nerve; chartaceous or coriaceous, glabrous or with a few scattered ferruginous hairs along lower side of midrib, nitidous above, nitidulous below; midrib minutely crested above, prominent below, secondary nerves 9—16, ascending at an angle of 45°—65°, curved or S-shaped, diminishing until inconspicuous near margin, prominulous above, subimpressed below, tertiary nervation transverse or subparallel, prominulous on either side and minutely crested, but more conspicuous above; petioles 1.5—3.5 cm long, grooved above, whitish or ferruginously sericeous. *Flowers* in few-flowered clusters, or in clusters along a leafless axillary ferruginously shoot; pedicels terete or angular, 5—10 mm long, ferruginously sericeous. *Sepals* 5, outer ones triangular-ovate, 3.5—4 by 2—2.5 mm, apex subacute or acute, ferruginously pubescent without, ferruginously sericeous within, inner sepals triangular, 2—3.5 by 1.5—2 mm, apex obtuse, margin membranous, outside ferruginously sericeous in a small field in the basal part only, margin ciliate, ferruginously sericeous within except along the margin. *Corolla* 4—6 mm long, lobes subquadrangular or suborbicular, 1—1.5 by 0.8—1.2 mm, apex truncate. *Stamens* c. 1.5 mm long, inserted in the middle, filaments c. 0.2 mm long, anthers triangular, 1.2—1.5 mm long, apex mucronate, dehiscing laterally. *Staminodes* spatulate, 1—1.5 mm long, apex obtuse or acute. *Ovary* 5-lobed, c. 1 mm in diam., disk 5-lobed, ferruginously hirsute, tapering into style; style terete, 4—7 mm long, 5-lobed at apex. *Fruits* obovoid, 1.5—2 by 1—1.3 cm, 2—5-seeded, apex with a short remnant of style, the latter located in a circular whitish sericeous field, pericarp crustaceous, blackish or brownish, glabrous; seeds obovoid or fusiform, c. 1.6 by 0.6 by 0.5 cm, triangular in transverse section, brown, but yellow towards scar, nitidous, scar linear, c. 1 mm wide, in the lower $^2/_3$ of the seed, testa thin, albumen copious, cotyledons foliaceous, radicle conoid, 1—2 mm long, obtuse, exsert.

Type specimen: *Dallachy s.n.* in MEL.

Distr.: Australia.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Australia. Queensland, Cook distr., Paronella Park, c. 20 km S of Innisfail, alt. c. 50 m: *L. S. Smith 3720 A* (BRI), tree c. 10 m, fl. Aug.; Juara Creek, between Kairi and Danbulla, Atherton Tableland, alt. c. 700 m, in rain forest on granitic soil: *L. S. Smith 3784* (BRI), tree, fl. Aug.; ibidem: *L. S. Smith & Webb 3349* (BRI, L), tree c. 23 m, fl. Aug.; near Atherton: *Bailey s.n.* (BRI), fl.; Johnstone River: *Michael s.n.* (BRI), fr. Aug.; Upper Baron river, near Atherton: *Francis s.n.* (BRI), tree c. 22 m, fr. Nov.; *North Kennedy distr.:* Mt Fox, near Ingham: *Clemens s.n.* (BRI), fl. & fr. Nov.; Kirrama Range, W. of Kennedy, between Society Flat and Yuccabine Creek, alt. c. 600 m: *White s.n.* (BRI, L), tree c. 13 m, fl. Aug.; *without known distr.*: Mt Spee, near Bambaroo: *Francis s.n.* (BRI), tree c. 22 m, fr. Nov.; Rockingham Bay: *Dallachy s.n.* (BRI, K, L, MEL), fl.

Remarks: *P. xerocarpa, P. laurifolia* and *P. queenslandica,* three closely related species, form the Australian counterpart of the New Guinean species which are related to *P. firma* (*P. moluccana, P. macropoda,* etc.) and show the characteristic details of these species, viz. the truncate corolla-lobes and the pubescent inner side of the calyx. The first two species are difficult to separate on foliar details as is the case in some New Guinean species. The tertiary nervation is still transverse but tends to be more parallel to the secondary nerves and is less dense. In *Dallachy s.n.* in the Kew Herbarium a branchlet is present in which some leafless axillary flower-bearing shoots provide another detail for the close affinity between this species and *P. firma.*

P. xerocarpa and *P. laurifolia,* though closely related can be separated by the broader leaves with an inconspicuous tertiary nervation above in *P. laurifolia.* Moreover, in *P. xerocarpa* the top of the fruit is whitish sericeous and the style is sunk into the top of the fruits, while in *P. laurifolia* the top is glabrous and the broadened base of the style is not sunk into the fruits.

46. P. laurifolia (Richard) Pierre, Not. bot. Sapot., 1891, 36 — *Sersalisia laurifolia* Richard, Sert. Astrolab., 1839, 84, t. 31; Domin, Bibl. Bot. 89, 1928, 1062 — *Pouteria richardii* (F. v. M.) Baehni, 1942, 287 — *Fig. 31.*

Trees, c. 15 m. Branchlets angular or subterete, 1—4 mm in diam., yellowish puberulous, glabrescent. *Leaves* scattered, elliptic or elliptic-oblong or obovate, 9—21 by 3—7.5 cm, apex rounded, obtuse or short obtusely acuminate, acumen 3—10 mm long, base broadly cuneate and unequal; with a narrow but distinct intramaginal nerve; coriaceous, glabrous on either side, dull above, glossy below; midrib impressed above and minutely crested, prominent below, secondary nerves 6—16, ascending at an angle of 60°— 75°, curved or straight, diminishing until inconspicuous, sometimes irregularly archingly joined, narrowly canaliculate above, prominent below, tertiary nervation transverse, sparse, inconspicuous or absent above, prominulous below; petioles 2—3 cm long, grooved above, whitish sericeous, but mature ones glabrous. *Flowers* in few- to many-flowered clusters; pedicels angular, slender, filiform, 9—15 mm long, sparsely whitish sericeous. *Sepals* ovate, 1.5—3 by 1.5—3 mm, apex subacute or obtuse, sparsely

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Fig. 30. *P. xerocarpa,* a. habit, b. flowerbud, part of calyx removed, c. sepal, outside, d. sepal, inside, e. part of corolla, inside, f. gynaecium, g. fruit, h—k. seed, m. longitudinal section of seed, n. fruit. (*Dallachy s.n.*).

whitish puberulous without, ferruginously sericeous within, inner sepals with membranous, ciliate margin. *Corolla* 3—4.5 mm long, lobes suborbicular, 1.5—2 mm in diam., apex truncate and sometimes indistinctly obtusely acuminate. *Stamens* c. 2 mm long, inserted in the lower fourth, filaments subulate, c. 1.2 mm long, anthers ovoid, c. 1 mm long, apex obtuse, mucronate, dehiscing laterally. *Staminodes* oblong, 1—1.5 mm long, apex obtuse, rounded or truncate. *Gynaecium* conoid, 2—5 mm long, ovary 5-lobed, 5-celled, with 5 bundles of yellowish or whitish hairs at the base; style 5-ribbed, apex truncate. *Fruits* obovoid, 10—22 by 5—9 mm, oblique

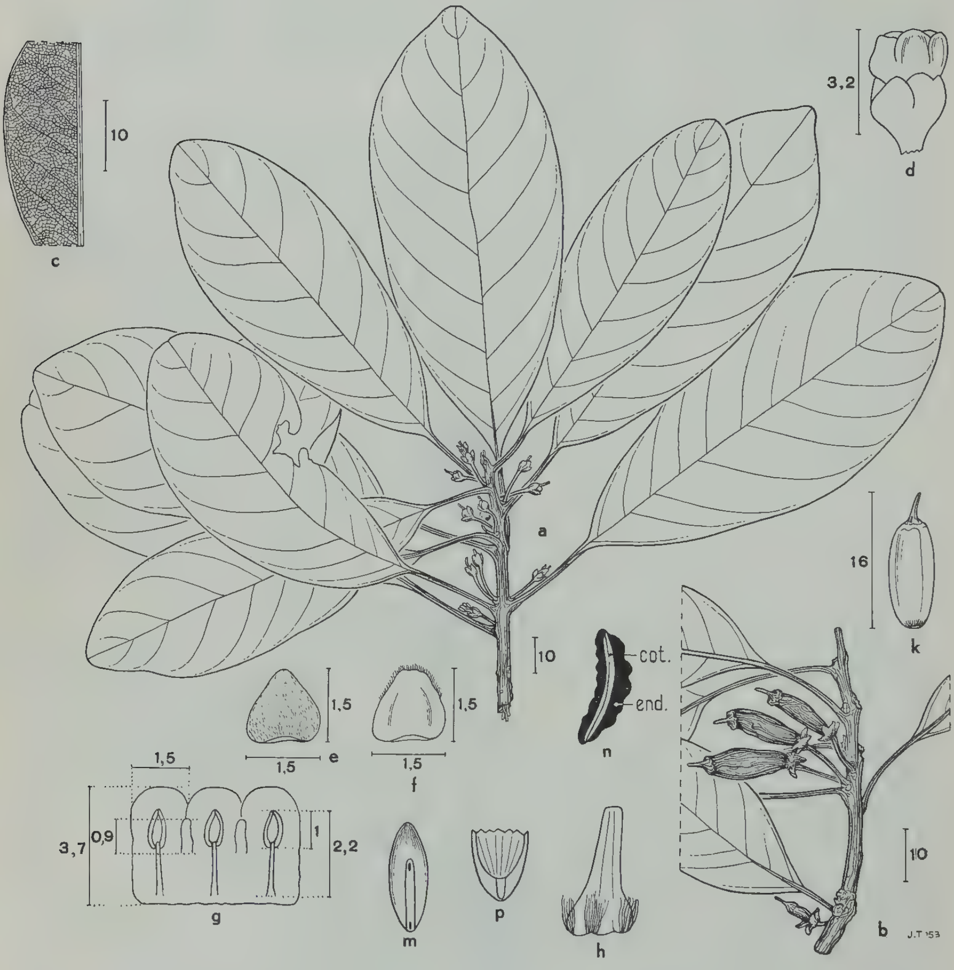


Fig. 31. *P. laurifolia,* a. habit, b. branchlet with fruits, c. part of leaf, d. flower, e. sepal, outside, f. sepal, inside, g. part of corolla, inside, h. gynaecium, k. fruit, m. seed, n. transverse section of embryo, p. part of longitudinal section of embryo (a, c–h. from *L. S. Smith 4170,* b, k–p. from *Petrie 37*).

and angular, apex truncate, one-seeded, with an up to 3 mm prolonged style at apex, glabrous, except for a ring of whitish hairs at base, brownish-olivaceous, dull or nitidous, pericarp thin, chartaceous; seeds fusiform, 9—15 by 6—8 by 5—7 mm, apex obtuse, base subacute, brownish, dull, albumen copious, cotyledons foliaceous, radicle cylindrical, 1.5—2 mm long, obtuse, exsert.

Type specimen: *Voyage de l'Astrolabe 6* in P.

Distr.: Australia.

AUSTRALIA. Northern Australia, Melville Island: *Fraser 226* (K), fl. — Queensland, Wide Bay distr., c. 8 km NE. of Bundaberg, in rainforest remnant near crossing of Burnett Heads road and Pemberton Railway Line, alt. c. 16 m: *L. S. Smith 4170* (BRI, L), tree c. 13 m, fl. Oct.; Range W. from Koumala, S. of Mackay: *Francis s.n.* (BRI), fl. buds May; Baffle Creek distr., *White s.n.* (BRI), April; Bauple: *Missing s.n.* (BRI), fr.; Biggenden State Forest: *Lachlan 14* (BRI), fr.; Maroochie: *Low 264 A* (BRI); Biggenden, rocky gorge base of Biggenden Bluff: *White 7680* (BRI), small tree, fl. May; Many Peaks: *Greenslade s.n.* (BRI), fl. May; Gympie: *Moore 437* (BRI), fl.; Yandina: *de Beuzeville s.n.* (BRI), juv. fr.; South Kennedy distr.: Eungella Range, rain forest: *White 12863* (BRI), medium tree, fl. & fr. Aug.; ibidem, Dalrymple Heights and vicinity: *Clemens s.n.* (BRI), fl. July/Nov.; Maryborough distr.: *Simon s.n.* (BRI), juv. fr. April; without known distr.: Mt Cooroy: *Staer s.n.* (NSW), fr. Sept.; Fraser Island: *Petrie 37* (BRI, NSW), fr. Oct.; Moreton Bay: *Voyage de l'Astrolabe 6* (P), fl.

47. P. queenslandica van Royen, nov. sp. — *Pag. 430 and fig. 32.*

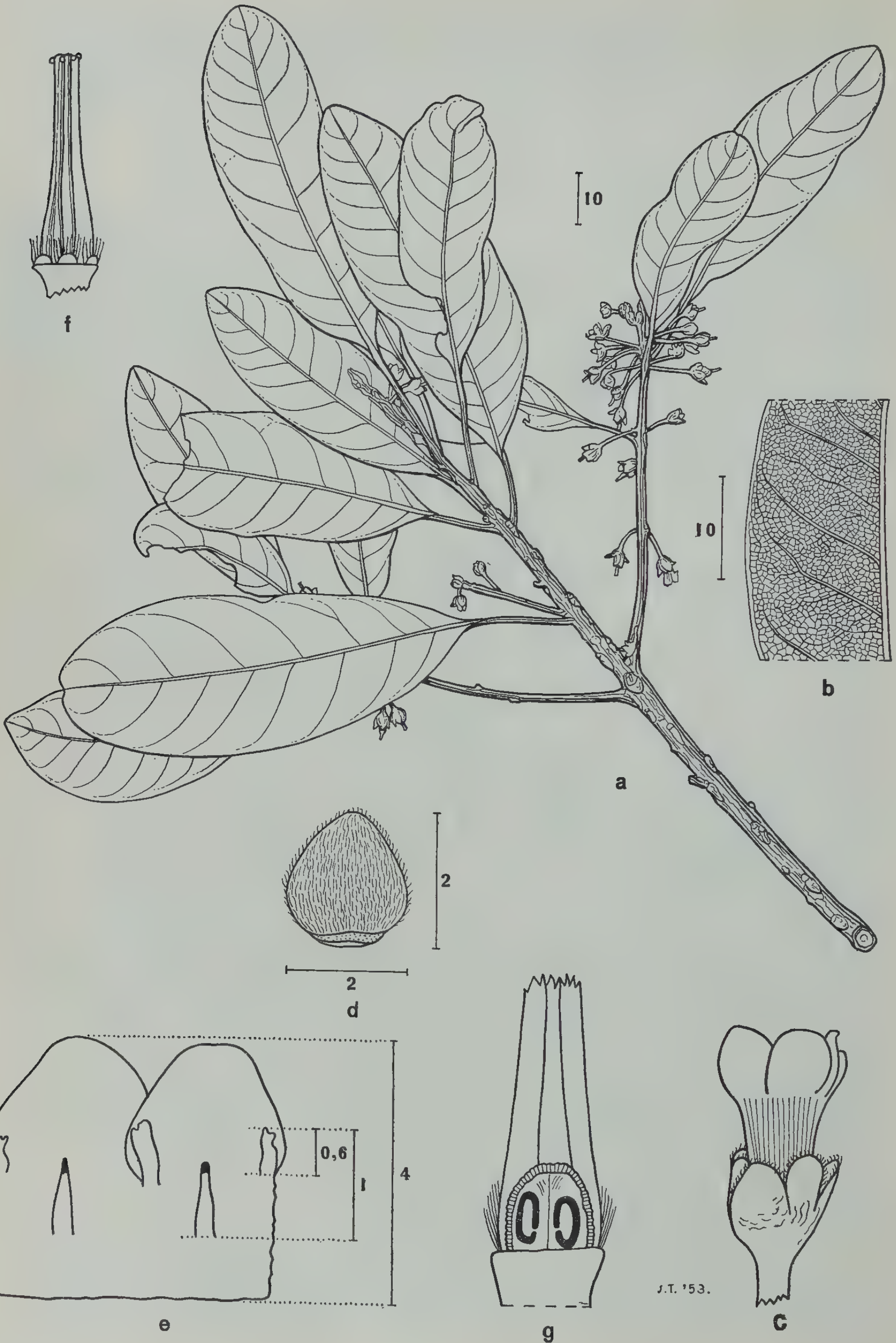
Trees or shrubs? Branchlets terete or angular, 2—4 mm in diam., ferruginously sericeous, glabrescent. *Leaves* scattered, oblong or obovate, 5—10 by 1.5—3 cm, apex obtuse or short obtusely acuminate, acumen 0.5—2 mm long, base broadly cuneate, abruptly narrowed and decurrent along upper surface of petiole; with a narrow but distinct intramarginal nerve, coriaceous, glabrous, dull on either side; midrib grooved above, minutely crested, prominent below, secondary nerves 7—9, ascending at an angle of 55°—65°, straight, sometimes curved, diminishing until inconspicuous, rarely irregularly archingly joined, impressed above, prominulous below, tertiary nervation transverse with a reticulate nervation in between, prominulous or inconspicuous on either side; petioles 0.8—2 cm long, grooved above, whitish sericeous, soon glabrous. *Flowers* ♀ or ⚥, solitary or in few-flowered clusters; pedicels slender, angular, 5—10 mm long, ribbed, whitish sericeous. *Sepals* triangular or broadly ovate, 2—3.5 by 2—3 mm, apex obtuse, whitish sericeous without, fimbriate along margin, pale yellowish sericeous within, inner sepals with membranous margin. *Corolla* 3.5—4.5 mm long, lobes suborbicular, 2.5—3 by 2—2.5 mm, apex truncate, sometimes finely ciliate. *Stamens* 1—1.5 mm, inserted in the basal third, incompletely known, filaments lanceolate, 1—1.5 mm long. *Staminodes* petaloid or lanceolate, 1—1.5 mm long. *Gynaecium* narrowly conoid, 3.5—4 mm long, distinctly 5-ribbed, at the top with 5 stigmas, disk 10-lobed, densely pale reddish hirsute. *Fruits* unknown.

Type specimen: *Haines 136 Q* in K.

Distr.: Australia.

AUSTRALIA. Queensland, Eungetta Mts, forest: *Haines 136 Q* (K), fl. March.

Remarks: This species has a close affinity to *P. xerocarpa* and *P. laurifolia* but differs in the oblong or slightly obovate and smaller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leaves, the obtuse apex, fewer indistinct secondary nerves (7—9 against 9—16) and in the sparse and rather indistinct tertiary nervation.

48. P. ralphiana (F. v. M. ?) Dubard, 1912, 56 — *Achras ralphiana* F. v. M. ? in Baillon, Hist. Pl. 11, 1892, 280, *nomen* — *Sersalisia ralphiana* Baillon in Dubard, 1912, 56, *in synom.* — *Planchonella ralphiana* Dubard, Baehni, 1942, 428, *sp. excl.*

Trees? Branchlets subterete or angular, 1—1.5 mm in diam., glabrous. *Leaves* scattered or subopposite, lanceolate, 4.5—11.5 by 1.2—3 cm, apex obtusely acuminate, acumen 3—5 mm long, base narrowly cuneate, decurrent; with a narrow intramarginal nerve, coriaceous, glabrous above, greyish tomentose and glabrescent below; midrib prominent on either side, secondary nerves 6—8, ascending at an angle of 55°—65°, curved and diminishing until inconspicuous, prominent above, prominulous below, tertiary nervation transverse but subparallel to the secondary nerves, prominulous above, inconspicuous below; petioles terete, 5—13 mm long, canaliculate above, glabrous. *Flowers* solitary or 2 in each axil; pedicels 1.5—2 cm long, terete, densely greyish tomentose. *Sepals* lanceolate, 7—8 by 3 mm, apex subacute, greyish tomentose without, ferruginously within, inner sepals tomentose without but glabrous along the margins. *Corolla* 8—9 mm long, lobes spatulate, 2—3 by c. 1.5 mm, apex rounded. *Stamens* c. 2 mm, inserted halfway the corolla, filaments c. 0.5 mm long, anthers ovoid, c. 1.5 mm long, apex mucronate, dehiscing laterally. *Staminodes* lanceolate, c. 1.5 mm long, apex obtuse or subacute, with 1 or 2 tips. *Gynaecium* 8—9 mm long, ovary c. 1.5 mm long and in diam., 5-celled, tapering into style, apical part densely hirsute, basal part hispidulous. *Fruits* unknown.

Type specimen: *von Mueller s.n.* in BRI.

Distr.: Australia.

Australia. Queensland, Rockingham Bay: *von Mueller s.n.* (BRI, P), fl.

Remarks: A description of this species has never been given except for the short one in Baillon by von Mueller and it is doubtful as to whether it is a sectional description or that of *Achras ralphiana* only.

49. P. brownlessiana (F. v. M.) van Royen, nov. comb. — *Achras brownlessiana* F. v. M., Fragm. 7, 1870, 111 — *Sersalisia brownlessiana* (F. v. M.) Domin, Bibl. Bot. 89, 1928, 1062 — *Pouteria brownlessiana* (F. v. M.) Baehni, 1942, 318 — *Sersalisia brachyloba* Domin, l. c., 1061 — *Pouteria brachyloba* (Domin) Baehni, 1942, 341 — *Fig. 33.*

Tree. Branchlets terete or compressed, 1—3 mm in diam., appressedly greyish or yellowish ferruginous puberulous, glabrescent. *Leaves* obovate or oblanceolate, 5—15 by 1.5—5.5 cm, apex obtusely acuminate, acumen 2—5 mm long, base attenuate, tapering into petiole; margin undulate, with a narrow intramarginal nerve; chartaceous, glabrous, nitidous above and brown, but silvery or greyish coloured and nitidulous below and whit-

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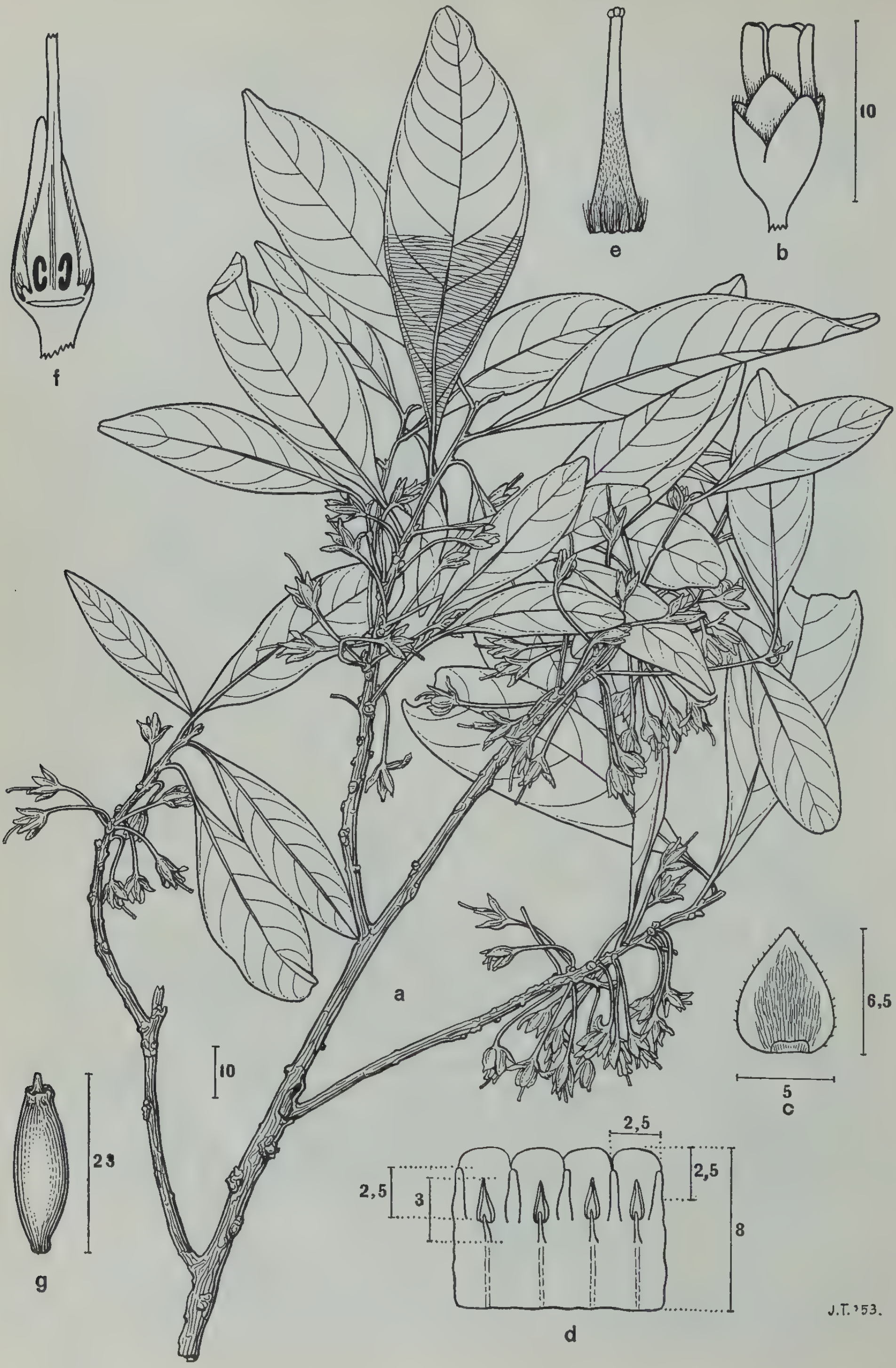
Fig. 32. *P. queenslandica,* a. habit, p. part of leaf, c. flower, d. sepal, inside, e. part of corolla, inside, stamens reduced, f. gynaecium, g. gynaecium, part of outer wall removed. (*Haines 136 Q*).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ish or yellowish puberulous, glabrescent; midrib prominulous above, minutely crested, sometimes broadly impressed in basal part, prominent below, secondary nerves 7—10, ascending at an angle of 60°—65°, curved, very indistinctly archingly joined or diminishing until inconspicuous near margin, prominulous or prominent on either side; petioles 0.8—2 cm, canaliculate above, sometimes minutely crested, greyish puberulous. *Flowers* solitary or in clusters of 2 or 3; pedicels terete, 1—2.5 cm long, greyish puberulous. *Sepals* ovate or broadly elliptic, 6—7 by 4—5.5 mm, apex obtuse or subacute, greyish or yellowish sericeous without, ferruginously sericeous within except along margin. *Corolla* 7—8 mm long, lobes quadrangular, 2—2.5 by 2—2.5 mm, apex subtruncate. *Stamens* 2.5—3 mm long, inserted below the middle, filaments subulate, c. 1.5 mm long, anthers sagittate, c. 1.5 mm long, dehiscing laterally to extrorsely. *Staminodes* lanceolate, 2—2.5 mm long, apex truncate or retuse. *Gynaecium* long conoid, up to 7 mm long, 5-lobed, base surrounded by the 5-lobed, whitish hirsute disk, whitish puberulous halfway up the style, glabrous on the basal part, style exsert. *Fruits* ellipsoid-oblong, c. 3.2 by 1 cm, truncate, 2-seeded, with an up to 1 cm long prolonged style which is sunk into apex of fruit, pericarp thin, ligneous, glabrous, except for a ring of yellowish hairs at base of style and a ring of whitish hairs at base of fruit, greyish or blackish, dull; seeds ellipsoid-ovoid, flat on one side, c. 1.8 by 0.8 by 0.6 cm, subacute at either end, dark brown, nitidous, albumen copious, cotyledons foliaceous, radicle conoid, 1.5—2.5 mm long, subacute.

Type specimen: *Dallachy s.n.* in MEL.

Distr.: Australia.

AUSTRALIA. Queensland, Rockingham Bay: *Dallachy s.n.* (MEL), fl.; Cook distr., Gadgarra near Peeramon, alt. c. 800 m, in rain forest: *Blake 15258* (BRI), tree c. 10 m, Sept.; Gadgarra Reserve, Atherton Tableland, alt. 800 m, rain forest: *Kajewski 1167* (BRI, K, NSW), medium sized tree up to 25 m; ibidem: *Francis s.n.* (BRI), fl. March; ibidem: *White 1577* (BRI, NSW), small tree, fl. March; Bossman river gorge, rain forest: *Brass 2142* (BRI, K), small weak-branched tree, fl. Febr., lvs smooth and shining above, pale and iridescent below, corolla-lobes incurved and closely contiguous, leaving only a small orifice level with top of stigma; North Kennedy district, Koolmoon Creek, c. 11 miles due SSE of Ravenshoe, alt. c. 800 m, in rain forest: *L. S. Smith & Webb 4635* (BRI, L), tree 16 m, juv. fr., Sept.

Remarks: This species differs from the other species of Group 4 in the glabrous lower part of the ovary. The fruit has been described from *White 1577* in BRI.

50. P. singuliflora (White & Francis) van Royen, nov. comb. — *Sideroxylon singulifolium* White & Francis, Proc. Roy. Soc. Qld 37, 9, 1926, 161 — *Pouteria ? singuliflora* (White & Francis) Baehni, 1942, 316 — *Fig. 34.*

Trees, up to 10 m. Branchlets angular, c. 2 mm in diam., sparsely greyish or ferruginously sericeous, glabrescent. *Leaves* conferted or scattered, alternate but the uppermost leaves opposite, obovate or elliptic, 5—13 by 2—3.5 cm, apex rounded or sometimes bluntly acuminate, acumen 2—

Fig. 33. *P. brownlessiana*, a. habit, b. flower, c. sepal, inside, d. part of corolla, inside, e. gynaecium, f. longitudinal section of flower corolla excluded, g. fruit. (a from *Francis s.n.*, b–f. from *Brass 2142*, g. from *White 1577*).

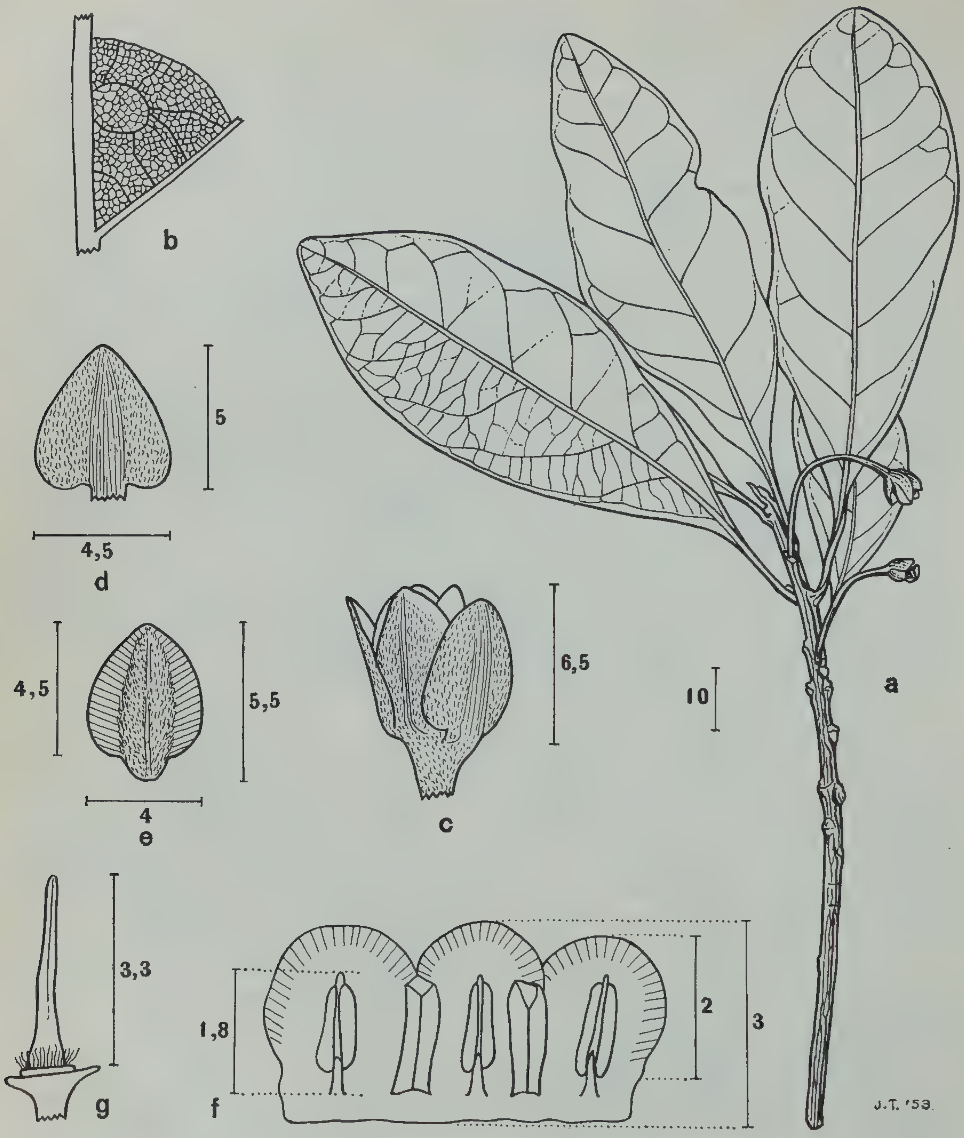

Fig. 34. *P. singuliflora*, a. habit, b. part of leaf, c. calyx, d. outer sepal, outside, e. inner sepal, outside, f. part of coralla, inside, g. gynaecium. (*White s.n.*).

5 mm long, base attenuate, tapering into petiole; margin involute, with a narrow intramarginal nerve; chartaceous or coriaceous, glabrous on either side, juvenile leaves sparsely whitish puberulous above, nitidulous below, secondary nerves 6—9, ascending at an angle of 55°—65°, curved, diminishing until inconspicuous, prominulous above, prominent below, tertiary nervation transverse, sparse, recurved near midrib, veinlets between tertiary

nervation reticulate, forming small prominulous alveoles above; petioles 4—15 mm long, canaliculate above, sparsely whitish puberulous, glabrescent. *Flowers* solitary, rarely 2 in each axil; pedicels terete, 1.7—3.5 cm long, thickened at apex, glabrous. *Sepals* broadly ovate or sagittate, orbicular, 5—5.5 by 4—4.5 mm, apex obtuse, carinate, greyish puberulous without, but outer ones glabrescent without, ferruginously sericeous within, inner ones membranous and fimbriate along margin. *Corolla* seen in bud only, c. 3 mm long, lobes orbicular, c. 2 by 2 mm. *Stamens* c. 2 mm long, inserted in the lower fourth, filaments subulate, c. 1 mm long, anthers sagittate, c. 1.5 mm long, apex obtuse, mucronate, dehiscing laterally. *Staminodes* solid, spatulate-oblong or linear, c. 2 mm long, carinate at inside, apex obliquely truncate or retuse. *Gynaecium* conoid, 3—6 mm long, greyish sericeous halfway up the style, disk composed of a few ferruginous hairs at base of ovary; style stout. *Fruits* unknown.

Type specimen: *White s.n.* in BRI.

Distr.: Australia.

AUSTRALIA. Queensland, Cook distr., Mt Bartle Frere, alt. c. 1600 m, in stunted montane forest: *Blake 15239* (BRI), crooked tree up to 10 m; ibidem: *Du Rietz 4313* (BRI), fl. buds, Aug.; Bellenden Ker, Centre Peak, just below summit, alt. c. 1600 m, stunted rainforest: *L. S. Smith 4220* (BRI, L), tree c. 5 m, fl. buds June; ibidem: *L. S. Smith 4213* (BRI), small tree; ibidem, near summit of Central Peak, S. of Cairns: *White s.n.* (BRI, K), fl. buds.

51. P. papyracea van Royen, nov. sp. — *Pag. 431 and fig. 35.*

Trees. Branchlets angular, 3—6 mm in diam., ferruginously or blackish woolly, older parts glabrous. *Leaves* scattered or subconferted at tip of branchlets, obovate or obovate-elliptic, 8—18 by 3—7.5 cm, apex rounded, obtuse or slightly obtusely acuminate, tapering towards base and very short decurrent; margin involute, with a very narrow intramarginal nerve; coriaceous, glabrous and nitidulous above, blackish or ferruginously or yellowish woolly below; midrib impressed above and minutely crested, stoutly prominent below, secondary nerves 13—17, slightly curved but mainly straight and curved at tips only, ascending at an angle of (60°—)75°—90°, archingly joined, sometimes diminishing until inconspicuous and joined by thickened tertiary nerves only, flat or impressed above, stoutly prominent below, tertiary nervation transverse, inconspicuous above, prominent below, the tertiary nervation between the transverse ones forming distinct prominulous alveoles above; petioles 2—3 cm long, flat above and sometimes minutely crested in the apical part, blackish or ferruginously puberulous. *Flowers* in few- to many-flowered clusters; pedicels angular, 7—10 mm long, ferruginously woolly. *Sepals* ovate, 3—3.5 by 2.5—3 mm, apex obtuse or subacute, ferruginously tomentose without and sometimes carinate, ferruginously sericeous within, inner sepals with membranous and ciliate margin. *Corolla* 4—5 mm long, lobes suborbicular, c. 1.5 by 1.5 mm, subtruncate or retuse. *Stamens* 2.5—3.8 mm long, inserted in the basal fourth, filaments linear or subulate, 2—2.5 mm long, anthers oblong-ovoid, 1—1.5 mm, apex obtuse, mucronate, dehiscing laterally. *Staminodes* oblong, 1.5—2 mm long, apex cordate or truncate. *Ovary* globose, tapering into style, 1—2 mm in diam., ferruginously hispidulous, disk 10-lobed, ferruginously hispidulous; style 5-ribbed, 2.5—3.5 mm long, 5-stigmate. *Fruits* obovoid, c. 2 by 1.5 mm, apex rounded or obtuse, slightly sunk in, 2-seeded, olivaceous, nitidous, glabrous except for a ring of whitish sericeous hairs at base, pericarp papyraceous (*unde nomen*); seeds obovoid, flat on one side, c. 1.8 by 1 by 0.8 cm, obtuse at either end, brown, nitidous, scar ¾ length of seed, 1.5—2 mm wide, brownish, dull, albumen copious, cotyledons foliaceous, radicle conoid, c. 3.5 mm long, acute.

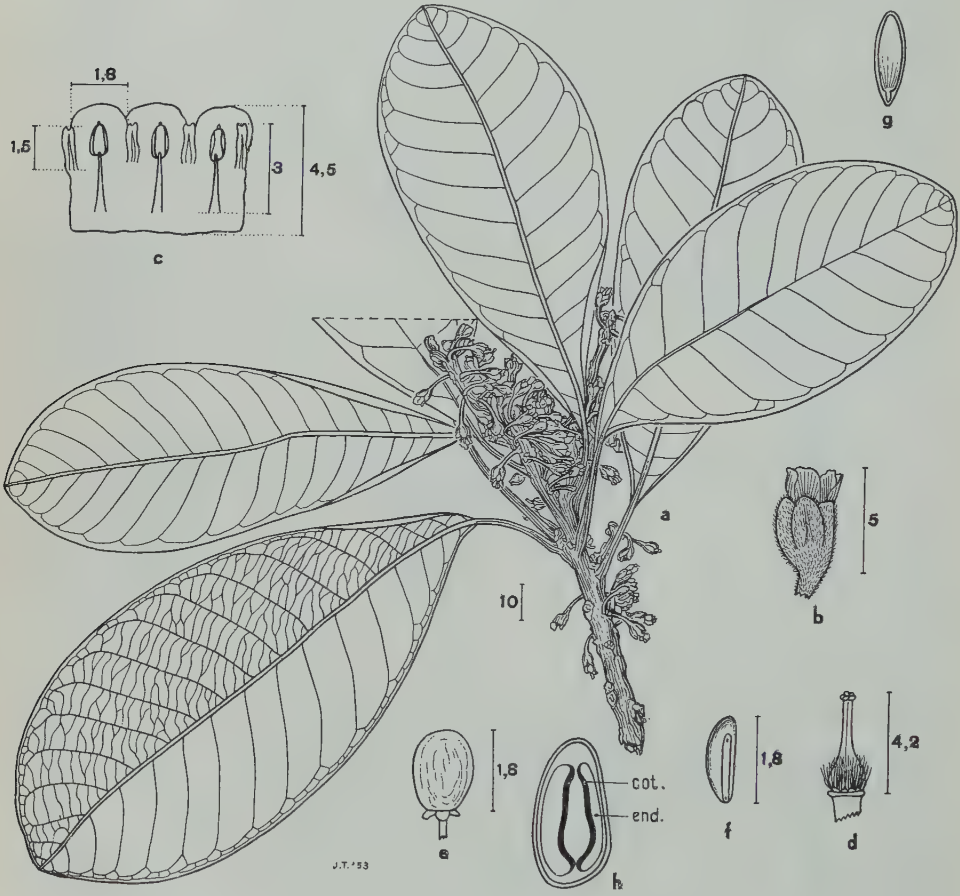

Fig. 35. *P. papyracea*, a. habit, b. flower, c. part of corolla, inside, d. gynaecium, e. fruit, f. seed, g. longitudinal section of embryo, h. transverse section of seed. (a–d. from *Byrne s.n.*, e–h. from *Krauss 102*).

Type specimen: *Krauss 102* in BRI.
Distr.: *Australia.*

AUSTRALIA. Queensland, Cook distr., c. 30 km NE of Atherton: *Krauss 102* (BRI), tree, fr. Nov.; Eungetta Range, Ingham: *Crain s.n.* (BRI), Febr.; Tinaroo Range near Danbulla: *Byrne s.n.* (BRI), scrub tree, fl. & fr. Jan./Febr.

Remarks: The fruits of this species are described from *Krauss 102* and the flowers from *Byrne s.n.*

This species closely resembles *P. laurifolia* and *P. xerocarpa* but differs from the former in the rather dense transverse tertiary nervation and from the latter in the stout secondary nerves. From either species it differs in the woolly tomentose pubescence of the lower surface of the leaves and outer surface of the sepals. The most important detail that separates this species from the other two is the papery pericarp from which the specific epithet is derived, and the base of the style which is not widened in the fruiting stage.

52. P. krausei H. J. Lam, Nova Guinea 14, 4, 1932, 561, t. 108 — *Sideroxylon spathulatum* Krause, Engl. Bot. Jahrb. 58, 1923, 474 — *Pouteria krausei* (H. J. Lam) Baehni, 1942, 322.

Trees. Branchlets compressed, 1.5—3 mm in diam., greyish or brownish sericeous, glabrescent. *Leaves* scattered, spatulate, obovate-spatulate, obovate-oblong or elliptic-oblong, 4—7 by 1.4—2.5 cm, apex obtuse or short obtusely acuminate, emarginate or entire, base cuneate, tapering into petiole; margin subinvolute, with a narrow intramarginal nerve; rigidly coriaceous, glabrous on either side, nitidulous above, dull below; midrib subimpressed above, prominent below and acute, secondary nerves 9—12, ascending at an angle of 45°—65°, curved, archingly joined, impressed above, prominulous below, tertiary nervation mainly transverse, indistinct or absent above, prominulous or absent below; petioles 5—12 mm long, broadly grooved above, greyish sericeous below in basal part, glabrescent. *Flowers* in few-flowered clusters; pedicels terete or angular, 5—12 mm long, whitish appressedly tomentose. *Sepals* 5, outer ones triangular-ovate, 1.5—2 by 1.5—1.8 mm, apex subacute, ferruginously sericeous on either side, ciliate along margin, inner ones ovate, 1.5—2 by 1.5—1.8 mm, ferruginously sericeous on either side, ciliate along margin. *Corolla* 2—3 mm long, lobes ovate, 0.8—1 by 0.8—1 mm, apex rounded. *Stamens* c. 1.5 mm, inserted in the lower fourth, filaments c. 1 mm long, anthers ovoid, c. 0.5 mm long, apex obtuse, mucronulate, dehiscing laterally or extrorsely. *Staminodes* linear or narrowly oblong, c. 0.8 mm long, apex acute, carinate, sometimes with 2 acute tips. *Ovary* ovoid, c. 1 mm high and in diam., densely whitish hirsute; style stout, 1—1.3 mm long, 5-sided, glabrous. *Fruits* not seen but according to Baehni: obovoid-globose, up to 1.5 by 1.2 cm; seeds ellipsoid, attenuate at either end, scar very narrow, shorter than the seed, albumen copious, cotyledons foliaceous.

Type specimen: *Schlechter 19915* in B.

Lectotype specimen: *Schlechter 19915* in L.

Distr.: New Guinea.

New Guinea. Northwestern New Guinea, Gomadjiji, forests, alt. 450 m: *Schlechter 19915* (L, P), fl. Aug., fl. & fr. in P.

Remarks: The sepals are pubescent on either side and not glabrous within as described by Krause.

As the type specimen in the Berlin Herbarium was burnt during the 1943 bombardment, the specimen in Leiden has been indicated as the lectotype specimen.

The specific epithet *spathulatum* can not be used when transferring *Sideroxylon spathulatum* Krause to Planchonella as Pierre, in 1890, made a new combination *Planchonella spathulatum* based on *Sideroxylon spathulatum* Hillebrand from Hawaii. (See *Planchonella sandwicensis*).

53. **P. torricellensis** (Schumann) H. J. Lam, Nova Guinea 14, 1932, 562; H. J. Lam, Blumea 5, 1942, 30 — *Rapanea torricellensis* Schumann, Schumann & Lauterbach, Nachtr. Deutsch. Schutzgeb. Südsee, 1905, 346 — *Pouteria torricellensis* (Schumann) Baehni, 1942, 379 — *Planchonella samoensis* H. J. Lam (as *P. samoensis (Reinecke) H. J. Lam*), 1925, 218, *nomen*, and in Christophersen, Bull. B. P. Bish. Mus. 154, 1938, 35, f. 10, *descr.* — *Sideroxylon samoense* Reinecke in msc. — *Sideroxylon acutum* Krause, Engl. Bot. Jahrb. 58, 1923, 479 — *Chrysophyllum beccarii* Pierre, in msc.

Trees, up to 45 m. Branchlets terete or angular, 2—4 mm in diam., ferruginously sericeous-pubescent near tip, glabrescent. *Leaves* scattered, ovate, elliptic or elliptic-oblong, 5—21 by 2.5—10 cm, apex short obtusely acuminate, acumen 2—7 mm long, base cuneate, shortly decurrent; margin undulate, with a distinct intramarginal nerve, sometimes slightly bullate; membranous or coriaceous, dark cinnamomous and nitidulous or nitidous above, dull below and more lightly coloured, sparsely whitish puberulous on either side mainly along midrib and nerves, but soon glabrous; midrib grooved above and minutely crested, prominent below, secondary nerves (6—)10—21, ascending at an angle of 65°—70°(—90°), archingly joined, curved or in larger leaves straight and curved at tips only, often sinuous, tertiary nervation inconspicuous but distinctly transverse, sparse, recurved near midrib and subparallel to secondary nerves, prominulous on either side, veinlets between tertiary nerves reticulate; petioles (1—)1.5—3.4 cm long, grooved above, glabrous. *Flowers* in many-flowered axillary clusters or very rarely in clusters along an up to 4 cm long, leafless shoot, which is angular and ferruginously sericeous; pedicels filiform, 5—12 mm, sparsely whitish puberulous, glabrescent. *Sepals* broadly elliptic or ovate, 0.5—1 by 1—1.5 mm, apex obtuse, whitish puberulous without (sometimes very sparse), glabrous within. *Corolla* 1—3 mm long, lobes lanceolate, 1—1.5 by 0.7—0.9 mm, apex subacute or acute. *Stamens* 1—2 mm long, inserted in the basal half, filaments subulate, 0.5—1.5 mm long, anthers ovoid-sagittate, c. 0.5 mm long, apex mucronulate, dehiscing laterally. *Staminodes* ovate, c. 0.5 mm long, narrowly lanceolate, apex subulate or cordate and apiculate. *Gynaecium* conoid, 1—1.5 mm long, ovary conoid, glabrous, surrounded at base by a small disk which is densely ferruginously or whitish hirsute; style stout, cylindrical, c. 0.5 mm long. *Fruits* green when young, but reddish, maroon or becoming purplish when mature, obliquely ellipsoid, 1.5—2(—2.5) by 0.6—0.9(—1.3) cm, often obliquely inserted, 1-, or rarely up to 3-seeded, with an up to 2 mm long remnant of the style, nitidulous or dull, glabrous, at base sometimes surrounded by a ring of white or ferruginous hairs, pericarp woody, rather soft; seeds obliquely obovoid, 1.4—1.9 by 0.5—0.8 cm, subacute at either end, brown, nitidous, scar as long as seed, c. 2.5 mm wide, dull, light brown, albumen copious, cotyledons foliaceous, radicle cylindrical, 1—2 mm long, obtuse, exsert.

Type specimen: *Schlechter 14461* in B.

Neotype specimen: *Aet 355* in L.

Vern. names: *New Guinea*, welenmus (Inanwatan), morep (Pami), diek (Kebar valley), senariga (Prafi plain), muhuhuab, pitugwa, mandoboi (Manokwari), menghabiej, mgkabje (Warnapi), kuakeia (Vailala), simun (Upper Waria); *Samoa*, mamalava.

Distr.: Bali, Ceram, Japen, New Guinea, Samoa.

BALI. Klungkung, Tjatur, alt. 1200 m: *NIFS bb 16995* (BO, L), May.

CERAM. Wai Tekuman, alt. c. 150 m: *Kornasi 999* (BO, L), fl. Febr.

JAPEN. without known loc., alt. c. 700 m: *NIFS bb 30298* (BO, L, SING).

NEW GUINEA. Western New Guinea, Fakfak region, Inanwatan, Timbai village, alt. c. 3 m: *NIFS bb 32622* (= *Lundquist 3*) (BO, L), fr. May, green; Kebar valley, N of Andjai, secondary forest, alt. 560 m: *van Royen 5019* (L), tree c. 30 m, fr. Nov., rather common; Prafi Plain, W of Manokwari: *NNGFS 429* (L), fl. March; ibidem: *NNGFS 313* (L), fl. Febr.; Manokwari, near Pami, alt. 25 m: *NIFS bb 15891* (BO, L); ibidem: *NIFS bb 15898* (BO, L), fr. brown, Sept.; ibidem, Andai: *Beccari PP 754* (FI), fr.; ibidem, Momi, clayey flat ground, primary forest: *Kostermans 239* (= *NIFS bb 33443*) (BO, L, SING), bud pale green, fr. pale green when young, mature reddish, tree with buttresses, Aug.; ibidem, alt. c. 10 m: *Kostermans 159* (= *NIFS bb 33381*) (BO, L); ibidem: *Yatasaki 25* (BO. L), fl. April; Warnapi village, 15 km N of Ransiki, alt. c. 40 m: *Kostermans 420* (= *NIFS bb 33586*) (BO, L); ibidem, alt. c. 20 m: *Kostermans 478* (= *NIFS bb 33630*) (BM, BO, L); Rouffaer river, alt. 100 m: *Docters van Leeuwen 11113* (BO, L), fl. Nov.; Hollandia, Berap: *NIFS bb 28945* (BO, L, SING), fr. Aug.; ibidem: *NIFS bb 28980* (BO, L, SING); ibidem: *NIFS bb 28901* (BO, L, SING); Aria, near Uta, alt. 4 m: *Aet 355 & 366* (BO, L, SING), tree, fr. green, July — Northeastern New Guinea, Morobe distr., Lae-Nadzab road: *NGF 213* (BRI, LAE), fl. green, fr. maroon, June; Lae, alt. c. 8 m, rain forest: *L. S. Smith NGF 1726* (BRI), fl. buds green, fr. green becoming purplish, Aug.; Torricelli Mts: *Schlechter 14461*, fl., *ex litt.* — Southeastern New Guinea, Fly river: *d'Albertis 6* (MEL), fl.; Kokoda, forest, alt. c. 400 m: *Carr 16363* (SING), tree c. 30 m, fr. April; Buna Hinterland, c. 15 km N of Embi Lakes, alt. c. 16 m, rainforest: *L. S. Smith NGF 1260* (BRI, L, LAE), tree 45 m, fl. buds, March; Milne Bay area, c. 800 m S of Waigana Plantation, alt. c. 10 m, swampy flat: *NGF 1311* (BRI, L, LAE), fl. March, fl. buds.

SAMOA. Upolu, without known loc.: *Graeffe 1351* (K), fr. — Savaii, above Sili, alt. c. 200 m, in forest: *Christophersen 3259* (K), tree 15 m, fl. buds Nov.; Mulifanua forest: *Reinecke 177* (B, BO, L), fl. Nov.

Remarks: As the type specimen in the Berlin Herbarium has been burnt in the 1943 disaster it is proposed to use *Aet 355* in Leiden as a neotype specimen. For the flowers *Kostermans 239* in Leiden has been used as 'type specimen' as in *Aet 355* fruits only are present.

This species in accordance with its insertion in this Group shows two types of inflorescences, i. e. axillary clusters of flowers or clusters along a leafless or almost axillary shoot. This last detail links Group 4 to Group 5, viz. *P. nitida* in which only this type of inflorescence is found. As some specimens of this species closely resemble *P. nitida* (e. g. *NGF 1311*) one might well wonder whether the two species are merely varieties of one species.

The distribution of this species is rather striking as it is found on Bali, Ceram, New Guinea and a few surrounding islands and on the Samoa islands, though the specimens of the last-named locality differ in a few minor details with the western specimens. The area thus is discontinuous and one might wonder, whether it will not be found also in the intercjacent areas e. g. in the Solomons, the more as this tree is a large one and can not be easily overlooked.

The specimen from Bali is somewhat dubiously inserted as neither flowers nor fruits are present. Also the very long petioles make the identification uncertain.

54. P. rigidifolia (Krause) H. J. Lam, Nova Guinea 14, 4, 1932, 560, t. 107 — *Sideroxylon rigidifolium* Krause, Engl. Bot. Jahrb. 58, 1923, 474 — *Pouteria rigidifolia* (Krause) Baehni, 1942, 319.

Trees. Branchlets terete or angular, c. 3 mm in diam., glabrous, ribbed when dry. *Leaves* conferted at tip of branchlets, oblong, 5—10(—14) by 1—2(—3.5) cm, apex acute or acuminate, acumen 2—5 mm long, base abruptly narrowed and tapering into petiole, rarely subrotundate, margin with a narrow intramarginal nerve; coriaceous, glabrous on either side, nitidous above, nitidulous below; midrib flat above or slightly grooved, secondary nerves 30—40 (or more?), ascending at an angle of c. 90°, straight, diminishing until inconspicuous, prominulous on either side, tertiary nervation transverse, inconspicuous on either side; petioles 8—15 mm long, flat above. *Flowers* in few-flowered clusters; pedicels 10—15 mm long. *Sepals* broadly ovate, c. 3 mm long, apex acute, pilose without, glabrous within (according to Lam pubescent within). *Corolla* 5—6 mm long, lobes broadly ovate, c. 3 mm long, apex rounded. *Stamens* c. 1.5 mm long, inserted in the middle, anthers ovoid-ellipsoid, c. 1 mm long, apex obtuse, dehiscing laterally. *Staminodes* obovate or spatulate. *Gynaecium* conoid, up to 3.5 mm long, with a pilose annular disk at base; ovary glabrous; style globoid at tip. *Fruits* unknown.

Type specimen: *Schlechter 20322* in B.

Distr.: New Guinea.

NEW GUINEA. Northeastern New Guinea, Torricelli Mts, alt. 800 m, in forest: *Schlechter 20322*, fl. Sept., *ex litt.*

Remarks: As the material has been destroyed in the Berlin disaster of 1943 and no other material turned up, the description of Krause and Lam's drawing of this species have provisionally to be regarded as representing the type material.

The description given above is derived from those of Krause, Lam and Baehni, as I did not see material of this species.

55. P. dies-reginae van Royen, nov. sp. — *Pag. 431 and fig. 36.*

Trees, up to 25 m. Branchlets angular, 3—5 mm in diam., glabrous. *Leaves* scattered, lanceolate or elliptic-oblong, 5—10 by 1.4—3 cm, apex acuminate, acumen 2—4 mm long, base cuneate; with a narrow intramarginal nerve; coriaceous, glabrous, brownish, nitidous above, dull below; midrib prominulous above, prominent below, secondary nerves 8—15, ascending at an angle of c. 80° (70° in the apical, 110° in the basal part), archingly joined, prominulous on either side, tertiary nervation transverse or parallel to the secondary nerves, veinlets between tertiary nerves reticulate, in juvenile leaves one of the nerves of the tertiary nervation between two secondary nerves often as distinct as the secondary ones, parallel to these and thus enlarging the number of secondary nerves up to 24, incon-

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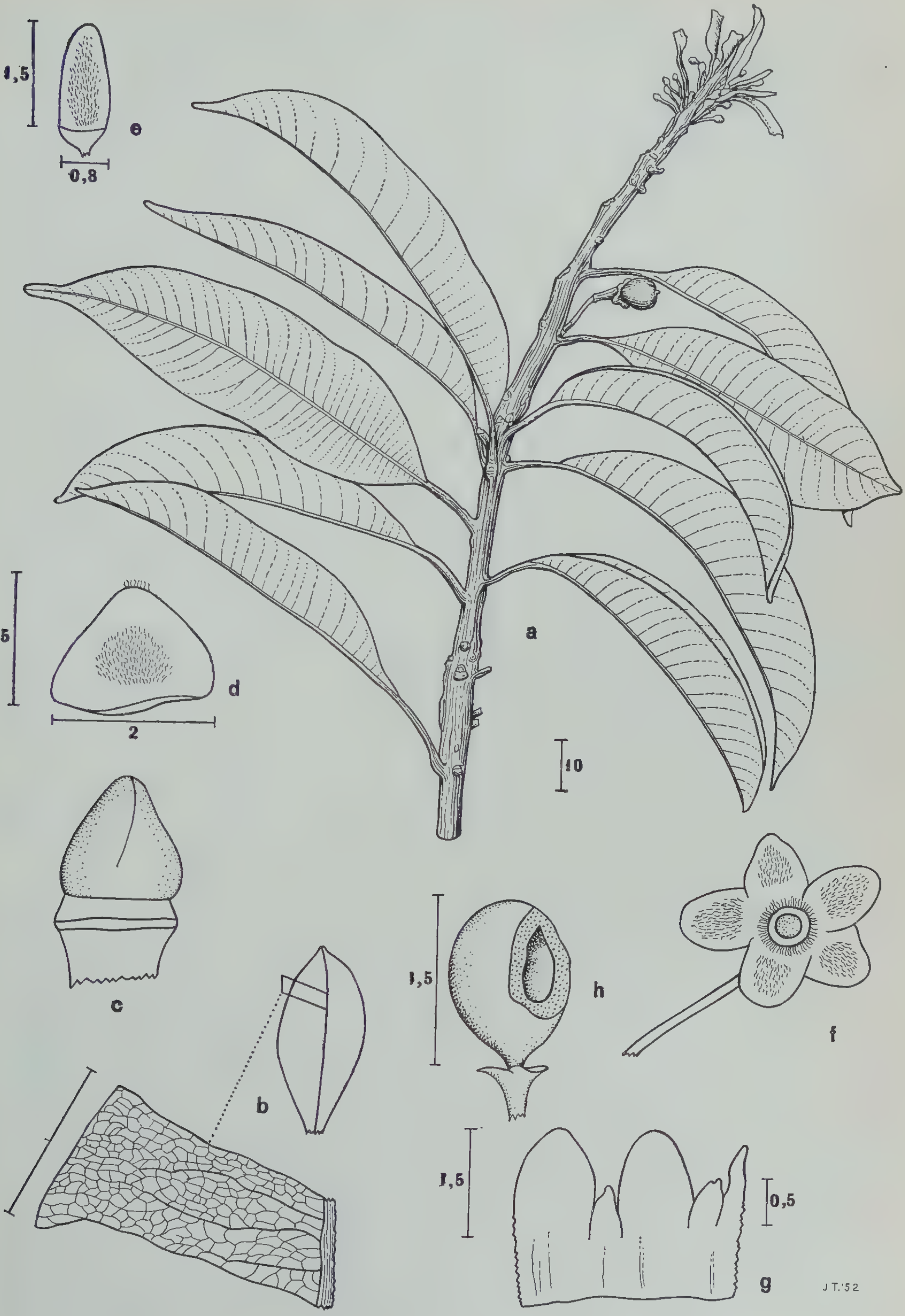
Fig. 36. *P. dies-reginae,* a. habit, b. part of leaf, c. flowerbud, d. outer sepal, inside, e. inner sepal, inside, f. calyx from above, g. part of corolla, inside, h. fruit, part of the wall removed. (*Brass & Versteegh 13150*).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spicuous above, prominent below; petioles 1.2—1.5 cm long, canaliculate above, widened at base, glabrous. *Flowers* ♀ or ⚥, clustered, known when young only; pedicels angular, 7—8 mm long, greyish tomentose. *Sepals* 5, outer ones squamate, 1.5—2 by c. 2 mm, apex obtuse, glabrous without, tomentose only within in central part, fimbriate at tip, inner sepals triangular, c. 1.5 by 1 mm, apex obtuse, glabrous without, fimbriate at tip, tomentose within only in central part. *Corolla* incompletely known, lobes spatulate, c. 1.5 mm long. *Stamens* unknown. *Staminodes* spatulate, c. 0.5 mm long. *Ovary* conoid, c. 1 by 1 mm, densely ferruginously hirsute, tapering into style, stigmas 5, disk present? *Fruits* brown, obovoid or globose, c. 1.5 by 1.5 cm, 5-celled, 2—3-seeded, densely ferruginously tomentose, pericarp spongy, woody; seeds incompletely known, c. 1 cm long (or longer?), blackish brown, with a light, linear scar which is slightly shorter than the seed, albumen copious, cotyledons foliaceous, radicle cylindrical, 1.5—2 mm long, apex obtuse, exsert. Pedicel of fruit up to 2.2 cm long, calyx-lobes up to 1.5 mm long, glabrous, except for the central part of inside.

Type specimen: *Brass & Versteegh 13150* in L.

Distr.: New Guinea.

NEW GUINEA. Western New Guinea, 4 km SW of Bernhard Camp, Idenburg river, on slope of ridge, alt. 950 m, primary rainforest: *Brass & Versteegh 13150* (A, L), tree up to 25 m, fr. brown, March; 6 km SW of Bernhard Camp. on slopes, primary forest, alt. 1150 m: *Brass & Versteegh 12585* (A, L), tree 20 m, fr. brown, Febr.

Remarks: The specific epithet used for this species is derived from the fact that on April 30th, 1953, the birthday of Queen Juliana of the Netherlands, this species was found to represent a new *Planchonella*.

The flower has been described from *Brass & Versteegh 12585* in Leiden but details, however, are derived from buds only. In the nervation a difference is found from other species of *Planchonella*, in as much as it is reticulate with a few nerves only parallel-transverse to the secondary nerves. The shape of the leaves resembles that of *P. ralphiana*, *P. singuliflora* and *P. brownlessiana*.

56. P. ? keyensis H. J. Lam, 1925, 197, f. 54 — *Pouteria keyensis* (H. J. Lam) Baehni, 1942, 210.

Trees up to 35 m. Branchlets terete or angular, 2—6 mm in diam., ferruginously puberulous, glabrescent. *Leaves* conferted near tip of branchlets, lancolate or lanceolate-oblong, 4—15 by 1.3—7.5 cm, apex obtusely acuminate, base narrowly cuneate, long decurrent along petiole; with a narrow intramarginal nerve; chartaceous or coriaceous, glabrous on either side, nitidous above, dull below; midrib rounded and prominulous on either side, secondary nerves c. 12, ascending at an angle of 55°—70°, but up to 90° in the basal part, irregularly archingly joined, prominulous above, stronger and more inconspicuous so below, tertiary nervation distinctly reticulate-parallel to the secondary nerves and nearly or equally as strong as the secondary nerves, thus apparently enlarging the number of secondary nerves over 50; petioles 8—24 mm long, flat above, rounded below, glabrous. *Flowers* pink, in few- to many-flowered clusters below the leaves; pedicels subterete, 3—4 mm long, glabrous. *Sepals* orbicular, 2—2.5 mm in diam., 2 outer sepals glabrous on either side, 2 inner sepals yellowish sericeous without, glabrous within, the third inner sepal partly sericeous without, glabrous within. *Corolla* 4—5 mm long, lobes oblong, 1—2 by 1—2 mm, apex rounded, ferruginously sericeous without. *Stamens* 3—5 mm long, inserted in the lower third, united with the *staminodes* and forming a tube, filaments subulate, 2—3.5 mm long. *Gynaecium* 1—2 mm long, ovary conoid, tapering into the style, c. 0.5 by 1 mm, base with an adnate ferruginously hispidulous; style stout, conoid, 1—1.5 mm long, 5-sided. *Fruits* unknown.

Type specimen: *Jaheri 138* in BO.

Vern. name: temajoe (Njao dialect, New Guinea).

Distr.: Kai, Misool and New Guinea.

KAI. without known loc.: *Jaheri 138* (BO, L), fl.

MISOOL. near Fakal: *Pleyte 1073* (BO, L), fl. Sept.

NEW GUINEA. Western New Guinea, distr. Hollandia, c. 4 km from Holtekang, alt. 2 m, primary forest: *Versteegh 52* (L), tree c. 35 m, fl. pink, Oct.

Remarks: The tertiary nervation in this species is aberrant from the types known in *Planchonella* but yet it can be inserted in this genus as by the nervation of *P. dies-reginae* it is linked to the transverse types of nervation in e. g. *P. firma*. The same phenomenon is found in Group 6 in which *P. sandwicensis* shows the same type of tertiary nervation as *P. keyensis* and is linked via *P. solida* and *P. micronesia* to e. g. *P. obovoidea* and *P. obovata*. On account of different floral details *P. keyensis* and *P. sandwicensis* are inserted in different groups. The tube formed by the united stamens and staminodes and which is adnate to the corolla-tube is a rather distinct feature of this species and as fruits are unknown there is some doubt whether *P. keyensis* is a *Planchonella* at all. The sericeous corolla distinguishes this species from the other species, except *P. oppositifolia* from America.

57. P. sphaerocarpa (Baillon) Dubard, 1912, 63 — *Sideroxylon ? sphaerocarpum* Baillon, Bull. Soc. linn. Paris 2, 112, 1890, 891 — *Pouteria sphaerocarpum* (Baillon) Baehni, 1942, 289.

Trees, 15—20 m. Branchlets terete, 2—7 mm in diam., irregularly striate or ribbed, dark brown puberulous, glabrescent. *Leaves* scattered, elliptic or obovate, 7—15 by 3—6 cm, apex obtusely acuminate, acumen 3—7 mm long, base broadly cuneate and sometimes oblique; with a yellowish intramarginal nerve; membranous or coriaceous, juvenile ones ferruginously hirsute on either side, mature ones glabrous on either side or with a few hairs in the angles between secondary nerves and midrib, nitidous above, dull below; midrib flat above and minutely crested, prominent below, secondary nerves 7—10, ascending at an angle of 50°—60°, slightly curved, archingly joined by some, more distinct tertiary nerves, prominulous above, prominent below, tertiary nervation transverse, prominulous on either side; petioles subterete, 2.5—4 mm long, flat and indistinctly minutely crested above, glabrous. *Flowers* ♂ or ♀, solitary or in few-flowered clusters; pedicels slender, 3—6 mm long, ferruginously sericeous. *Sepals* ovate, 2—3 by 2—3 mm, apex obtuse, puberulous without, glabrous within, inner ones with membranous margins and fimbriate. *Corolla* seen in bud only, 2—2.5 mm long, lobes ovate, c. 1 by 1 mm, apex truncate. *Stamens* seen in rudimentary state only, c. 0.5 mm long, inserted in the lower fourth, anthers ovoid, apex obtuse, dehiscing laterally. *Staminodes* obovate, irregularly serrate at tip, c. 0.5 mm long. *Ovary* globose, c. 1 mm in diam., truncate, ferruginously hirsute; style stout, cylindrical, 1.5—2 mm long. *Fruits* large, apple-shaped, 4—4.5 by 4—5 cm, blackish puberulous, 4- or 5-seeded; seeds obliquely ellipsoid, laterally compressed, 2—3 by 1.5—1.8 by 0.7—1.1 cm, obtuse at either end, carinate at one end, brown, nitidous, sometimes yellowish around the scar, the latter half as long as the seed, 6—9 mm wide, albumen copious, cotyledons foliaceous, radicle cylindrical, 3—5 mm long, obtuse at apex, exsert.

Type specimen: *Balansa 1326* in P.

Distr.: New Caledonia.

NEW CALEDONIA. Mt Nékou, above Bourail, forests, alt. 650 m: *Balansa 1326* (P), tree 15—20 m; Wagap: *Vieillard 1704* (P), fl.; Houailou, alt. 900 m: *Lécard s.n.* (P), fr. Febr.

Remarks: In the foliar and fruit details this species resembles more a *Pouteria* or a *Chrysophyllum* than a *Planchonella,* but the presence of staminodes excludes it from *Chrysophyllum,* and the copious albumen and foliar cotyledons separates it from *Pouteria,* though the wide scar, the large fruit and the leaves connects it with some *Pouteria* species, e. g. *Pouteria maclayana.* Also a disk is not found. Therefore it occupies a more or less separate place in Group 4. Moreover it represents the single species of that group outside New Guinea and Australia. These details are already observed by Dubard who writes: 'Ces caractères ne nous permettent pas d'attribuer avec sûreté cette forme à l'une des sections précédentes et d'autre part sont insuffisants, à notre avis, pour justifier une section spéciale'. To these remarks of Dubard nothing needs to be added as indeed this species occupies a rather curious position also in the subdivision given here.

Group 5.

58. **P. clementis** H. J. Lam, Boissiera 7, 1943, 97—99, f. 6 — *Pouteria clementis* (H. J. Lam) H. J. Lam, Blumea 5, 2, 1943, 397.

Trees up to 25 m. Branchlets stout, terete, 4—7 mm in diam., brownish ferruginously pilose. *Leaves* alternate, conferted near tips of branchlets, obovate, 6—20 by 4—10 cm, apex obtuse or short obtusely or acutely acuminate, acumen 1—3 mm long, base truncate or rounded; margin subinvolute, with a narrow intramarginal nerve; coriaceous, glabrous above except sometimes along midrib and nerves, brownish ferruginously pilose below, but denser along midrib; midrib minutely crested above, but prominulous and rounded below, secondary nerves 15—22, ascending at an angle of 70°—80°, but c. 90° in basal part, straight but strongly curved near margin and archingly joined, prominulous above, prominent below, tertiary nervation transverse, descendant near midrib, prominulous above, prominent below; petioles 3—5 by 3—4 mm, broadly canaliculate above, rounded or angular below, yellowish ferruginously pilose. *Flowers* solitary or in few-flowered clusters; pedicels terete, 2—3 mm long, yellowish pilose. *Sepals* ovate, 3.5—5.5 by 3—4.5 mm, apex subacute, ferruginously pilose without, ferruginously sericeous within but the basal part glabrous, inner sepals slightly smaller than outer ones. *Corolla* seen in bud only, 3—4 mm long, lobes ovate or subrotundate, c. 1.5—2 by 1.2—1.5 mm, apex obtuse. *Stamens* 2—2.5 mm long, inserted in the basal fourth or at the base, filaments subulate, c. 1 mm long, anthers ovoid, c. 1.5 mm long, apex obtuse, mucronulate, dehiscing laterally. *Ovary* conoid, c. 1.5—2 mm long, ferruginously hispidulous, tapering into style, the latter cylindrical, stout, 1—2 mm long, with 5 stigmas. *Fruits* globose, 1—2 cm in diam., yellowish tomentose, 4- or 5-celled, seeds incompletely known, c. 1 cm long, ellipsoid, black, scar linear, nearly as long as seed, embryo unknown.

Type specimen: *Clemens 1155* in L.

Distr.: New Guinea.

New Guinea. Northeastern New Guinea, Morobe distr., Buna, alt. c. 1600 m: *Clemens 8588* (A, B), fl. & fr. Aug., fr. brown; Quembung mission, near Margui, alt. c. 600 m: *Clemens 2164* (A, B), tree c. 23 m, fr. March; ibidem: *Clemens 1155* (L), fl. Dec.

Remarks: The fruit, which was unknown, is described from *Clemens 2164* in the Arnold Arboretum.

This species is closely related to *P. sebertii* of New Caledonia in its leaves and differs from that species in being a large tree, in the larger angle between secondary nerves and midrib, in the shorter petiole, and the colour of the indumentum, which is brownish ferruginous here and reddish ferruginous in *P. sebertii*. Together with *P. densinervia* and *P. ledermannii* it forms an intermediate group between Group 3 and 5 and in fact can be inserted in either Group. However, it is inserted here because *P. densinervia* and *P. ledermannii* have subopposite or alternate leaves, a character, together with the type of inflorescence, used here to distinguish Group 5. *P. clemensii*, moreover, has alternate leaves and, as in *P. densinervia* and *P. ledermannii*, the flowers are clustered and axillary while in the other species of Group 4 the flowers are borne in clusters along an axillary shoot, thus distinguishing these three species from the rest of this group.

59. P. densinervia (Krause) H. J. Lam, Nova Guinea 14, 4, 1932, 562, t. 114 — *Sideroxylon densinervium* Krause, Engl. Bot. Jahrb. 58, 1923, 476 — *Pouteria densinervia* (Krause) Baehni, 1942, 342.

Trees 12—18 m. Branchlets terete or subterete, 4—8 mm in diam., brownish ferruginously or brownish olivaceous woolly or puberulous, glabrescent. *Leaves* subopposite or alternate, obovate or oblanceolate, 15—25 by 4—8 cm, apex obtusely acuminate, acumen 5—11 mm long, base cuneate, tapering into petiole; with a narrow intramarginal nerve; subherbaceous, nitidous above and glabrous, but sometimes blackish pilose along midrib and bases of secondary nerves, nitidous below and yellowish or ferruginously tomentose along midrib and nerves; midrib impressed above and minutely crested, prominent below, secondary nerves 24—28, ascending at an angle of 60°—70°, straight, but curved at their tips, diminishing until inconspicuous, prominulous above, prominent below, tertiary nervation transverse, prominulous on either side, but more conspicuous below; petioles 2—4.5 cm long, broadly canaliculate above, yellowish-blackish or yellowish ferruginously villous. *Flowers* white or creamy, in few-flowered axillary clusters; pedicels 1—3 mm long, yellowish villous. *Sepals* olivaceous, broadly ovate, 3—4.5 by 3—4 mm, apex obtuse, yellowish or ferruginously puberulous without, fimbriate along margin, ferruginously sericeous within.

Corolla 4—6.5 mm long, lobes broadly obovate or rotundate-ovate, c. 2 by 2 mm, apex truncate, margin crenulate or entire. *Stamens* 2—3.5 mm long, inserted in the lower fourth or slightly below the middle, filaments subulate, 1—2.5 mm long, anthers yellow, ovoid-ellipsoid, 1—1.5 mm long, apex mucronulate, dehiscing laterally. *Staminodes* lanceolate, 1.5—2 mm, obtuse at apex. *Ovary* ovoid-globose, 2—3 mm in diam., ferruginously hispidulous, base surrounded by an annular, free, ferruginously hirsute disk; style stout, cylindrical, 2—3 mm long, glabrous. *Fruits* unknown.

Type specimen: *Schlechter 12698* in B.

Lectotype specimen: *Schlechter 12698* in L.

Distr.: New Guinea.

NEW GUINEA. Northeastern New Guinea, Sepik region, mountainforest near Felsspitze, alt. 1400—1500 m: *Schlechter 12698* (K, L), fl. Aug. — Southeastern New Guinea, Northern distr., Tufi subdistrict, near Budi Barracks, alt. c. 75 m, dense tall rainforest: *Hoogland 4626* (L), tree 18 m, fl. Aug.

Remarks: The type specimen in the Berlin Herbarium has been burnt in the 1943 disaster and therefore the material in Leiden has been chosen to replace the original type specimen.

The inner side of sepals is densely ferruginously sericeous and not glabrous as Krause mentions.

60. P. ledermannii (Krause) H. J. Lam, Nova Guinea 14, 4, 1932, 561, t. 111 — *Sideroxylon ledermannii* Krause, Engl. Bot. Jahrb. 58, 1923, 475 — *Pouteria ledermannii* (Krause) Baehni, 1942, 341.

Trees, 15—30 m. Branchlets terete, 4—8 mm in diam., yellowish pilose, glabrescent. *Leaves* conferted at tip of branchlets or scattered, opposite or subopposite, obovate-spatulate, 13—38 by 5—7 cm, apex obtuse or distinctly obtusely or acutely acuminate, acumen up to 2 cm long, base cuneate, subabruptly narrowed and decurrent; margin undulate, with a narrow intramarginal nerve; coriaceous, yellowish pilose on either side mainly along midrib and nerves, glabrescent above except in basal part of midrib and below along midrib and nerves, nitidulous above, dull below; midrib prominulous and flat above, prominent below, secondary nerves 14—24, ascending at an angle of 60°—90°, diminishing until inconspicuous, prominulous above, prominent below, tertiary nervation transverse, recurved near midrib, prominulous on either side, but more conspicuous below; petioles (3—)5—15(—30) mm long, broadly canaliculate above, rounded below, yellowish pilose. *Flowers* white, or creamish brown with brown margins, ♀, ♂ or ⚥, in many-flowered clusters between and below the leaves; pedicels terete, 5—12 mm long, yellowish or brownish pilose. *Sepals* triangular-ovate, 2—4 by 3—4 mm, apex obtuse, brownish woolly tomentose on either side, inner sepals with membranous, ciliate margin. *Corolla* 3—3.5 mm long, lobes rotundate-ovate, 1—2 by 1—2 mm, apical margin fimbriate in bud, glabrescent. *Stamens* 1.5—2 mm, inserted in the middle, filaments subulate, c. 1 mm long, anthers ovate-sagittate, 1—1.5 mm long, apex obtuse, short obtusely mucronulate, dehiscing laterally. *Staminodes* linear-oblong, c. 1 mm long, obtuse at apex. *Ovary* globose-ovoid, c. 1.5 mm in diam., densely yellowish hirsute, disk free, yellowish hirsute; style stout, c. 1 mm long, capitate. *Fruits* unknown.

Type specimen: *Ledermann 12248* in B.

Neotype specimen: *Ledermann 6956* in K.

Distr.: New Guinea and New Britain.

New Guinea. Northeastern New Guinea, Sepik region: *Ledermann 6956* (K), fl.; ibidem: *Ledermann 7976* (K), fl.; ibidem: *Ledermann 12248, ex litt.*

New Britain. Keravat, logging area, alt. 60 & 100 m: *Floyd 3447 & 6691* (L, LAE), tree c. 30 m, fl. Dec., fr. Jan.

Remarks: Though *Floyd 6691* is reported as having fruits these could not be traced neither in Leiden or Lae.

61. P. thyrsoidea White, J. Arn. Arb. 31, 1950, 109 — *Fig. 37.*

Trees, up to 30 m. Branchlets stout, 8—13 mm in diam., hollow, ferruginously puberulous or woolly. *Leaves* conferted near tip of branchlets, alternate, obovate or spatulate, 22—25(—44) by 8—10(—13) cm, apex short acutely acuminate, acumen 2—5 mm long, base narrowly cuneate, abruptly attenuate into and decurrent along sides of petiole; margin undulate, with a narrow intramarginal nerve; chartaceous or coriaceous, brownish sericeous or tomentose above but later glabrous and nitidous except in basal part and along midrib and nerves, ferruginously sericeous or puberulous below; midrib impressed and minutely crested above, prominent below, secondary nerves 18—26, ascending at an angle of 50°—90°, straight and curved near margin, archingly joined by some thickened tertiary nerves, prominulous above, prominent below, tertiary nervation transverse, near midrib perpendicular to the latter and recurved, prominulous on either side; petioles stout, 1—1.5 cm long, broadly grooved above, yellowish or ferruginously puberulous. *Flowers* very pale green, in clusters along 5—12 cm long, leafless, ribbed, ferruginously puberulous, axillary shoots; pedicels 3—5 mm long, terete, yellowish or ferruginously hirsute. *Sepals* 5 or 6, united at the base and forming a distinct tube, 3—4 mm long, lobes 2—2.5 by 1—1.5 mm, ovate-oblong, apex obtuse, yellowish or ferruginously puberulous on either side, except within in the basal part. *Corolla* 5- or 6-merous, 4.5—5 mm long, lobes lanceolate, 2.5—3 by c. 1.5 mm, apex obtuse. *Stamens* 4—4.5 mm long, shortly exsert, inserted slightly below the middle, filaments filiform, 3—3.5 mm long, anthers ellipsoid-ovoid, c. 1 mm long, apex obtuse, dehiscing laterally. *Staminodes* subulate, 2—2.5 mm long, acute. *Ovary* obovoid, c. 1 by 1.5 mm, sunk into the 10- or 12-lobed disk, whitish hirsute, 5-or 6-celled; style cylindrical, 3—4 mm long, ribbed, with 5 or 6 white stigmas. *Fruits* unknown.

Type specimen: *Hebblethwaite NGF 561* in A.

Distr.: Manus and Solomons.

Manus. without known loc., foothills: *Hebblethwaite NGF 562* (A, L), tree c. 30 m.

Solomons. According to White reported from Malaita and Kolombangara.

62. P. pedunculata (Hemsley) H. J. Lam & D. A. Kerpel, Blumea 3, 2, 1939, 258 — *Sarcosperma ? pedunculata* Hemsley, J. Linn. Soc. 26, 1889, 68, f. 3 — *Pouteria pedunculata* (Hemsley) Baehni, 1942, 286.

Trees, 9—12 m. Branchlets terete, 2—4 mm in diam., brownish or greyish puberulous, glabrescent, the younger parts densely lenticellate. *Leaves* subconferted at tip of branchlets, alternate, narrowly ovate or ovate-lanceolate or oblong, (5—)8—9 by 3—4 cm, apex long obtusely or acutely acuminate, acumen 3—10 mm long, base cuneate, subabruptly narrowed, decurrent; margin undulate, with a narrow intramarginal nerve; rigidly coriaceous, glabrous on either side, nitidous above, dull below; midrib prominulous or subimpressed above, minutely crested, prominent below, secondary nerves 8—12, ascending at an angle of 50°—70°, curved, diminishing until inconspicuous or very minutely archingly joined, prominulous on either side but distinct, tertiary nervation transverse, but almost parallel

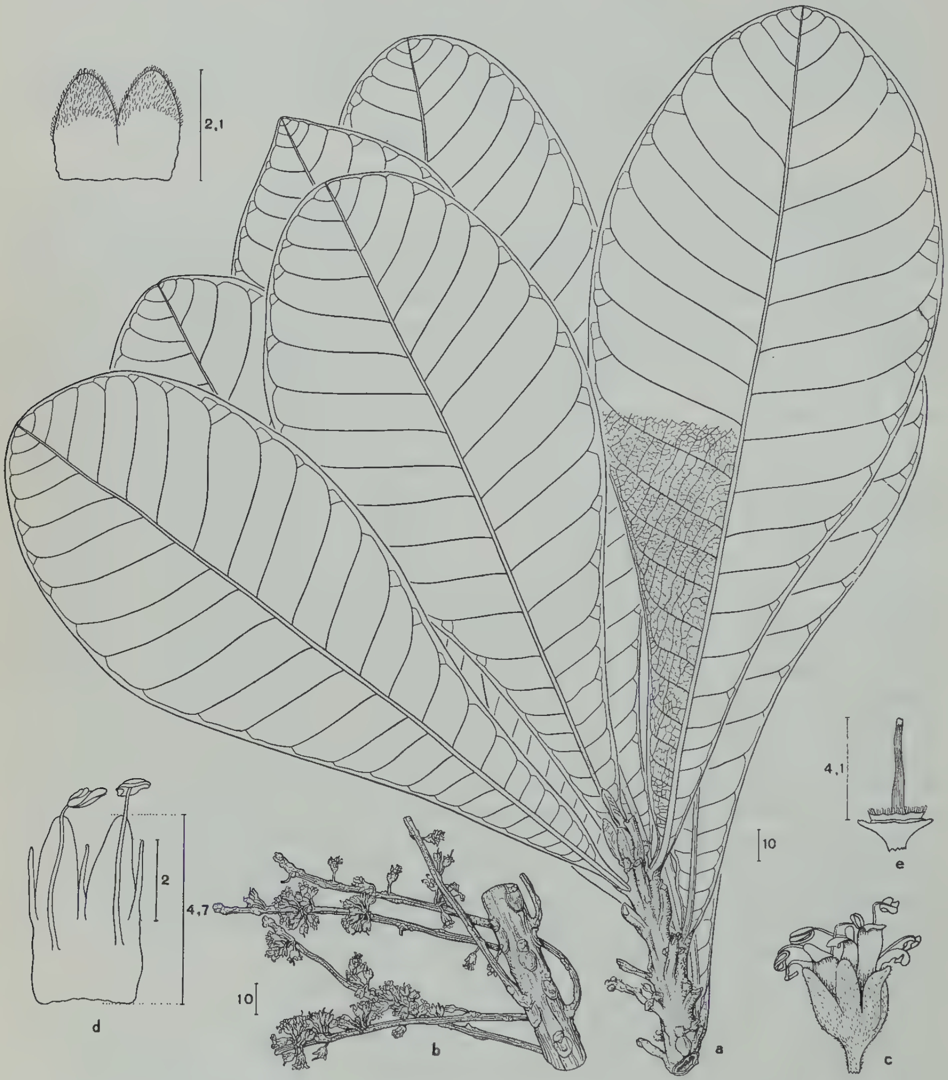


Fig. 37. *P. thyrsoidea,* a. habit, b. flowering branchlet, c. flower, d. part of corolla, inside, e. gynaecium. (*Hebblethwaite NGF 562*).
Unnumbered figure in upper left hand corner: two sepals, inside.

to the secondary nerves, near midrib perpendicular to the latter, inconspicuous on either side, sometimes one nerve more distinctly developed and subparallel to the secondary nerves, but not reaching the margin; petioles 7—15 mm long, narrowly canaliculate above, keeled below, minutely greyish or brownish puberulous, glabrescent. *Flowers* yellowish, solitary or in 2- or 3-flowered clusters along a short axillary shoot, with densely ferruginously puberulous peduncle, rachis, bracts and pedicels; peduncle terete or angular, 1—2 cm long; pedicels terete or angular, 3—4 mm long. *Sepals* deltoid or subovate, 2.5—3.5 by 2—2.6 mm, apex obtuse, ferruginously pubescent within. *Corolla* 4- or 5-lobed, 4—5 mm long, lobes ovate-oblong, 1.5—2.5 by c. 1 mm, apex obtuse. *Stamens* 4 or 5, 2—2.5 mm long, inserted slightly below the middle, filaments linear, 1—1.5 mm long, anthers ovate-cordate or sagittate, c. 0.5 mm long, apex bifid, dehiscing extrorsely. *Staminodes* 4 or 5, lanceolate, 1—2 mm long, obtuse at apex. *Ovary* subglobose, c. 1 by 1 mm, narrowing into style, 4- or 5-celled, glabrous; style subulate, 2—3 mm long. *Fruits* ovoid, c. 2.5 by 1.5 by 0.9 cm, one-seeded, with a curved, acuminate, up to 1 cm prolonged style; seeds ellipsoid, laterally compressed, c. 1.6 by 0.9 by 0.6 cm, obtuse at either end, brown, nitidous, scar $^2/_3$ the length of the seed, narrowly ovate, c. 1.1 by 0.4 cm, rather rough, dull, greyish brown, embryo unknown.

Type specimen: *Ford 246* in K.

Distr.: Indochina and southern China.

INDOCHINA. According to Lam & Kerpel reported from Cochinchina and Annam.

CHINA. Kwantung, Lu Tse Tsun, rocky mountain: *Chun 498* (L), fl. Jan.; without known loc.: *Ford 246* (K), juv. fr. Aug.

Remarks: The description of fruits and seeds is extracted from Lam & Kerpel's description and fig. 2 in their publication. Lam and Kerpel point out that the pedunculate inflorescence is a primitive condition and is very rare in the Sapotaceae. Though this is still so, two more examples are now known, viz. *Planchonella sarcospermoides* and *Pouteria lauterbachiana,* and this type of inflorescence might be found in *P. nitida* and *P. thyrsoidea.* These last two species are characterized by clusters of flowers along an axillary shoot, a detail also found sometimes in *Pouteria lauterbachiana.* When these clusters are reduced to one or two flowers the type of inflorescence found in *P. pedunculata* arises. Based on this hypothesis *P. pedunculata* has been inserted in this Group 5.

The fruits of *P. pedunculata* show a close resemblance to the recently found fruits of *Diploknema oligomera* H. J. Lam, which will be described in a later paper. *P. pedunculata* therefore shows details of quite different genera and even families, which is already pointed out by Lam and Kerpel, viz. *Sarcospermataceae,* the genera *Pouteria* (4-merous corolla and calyx, a character, however, found also in some *Planchonella* species), *Planchonella* and *Diploknema* and thus might represent a genus of its own. The embryo is unknown but nevertheless this species is provisionally inserted in *Planchonella* as the tertiary nervation closely resembles those of many *Planchonella* species.

63. P. schlechteri (Krause) H. J. Lam, Nova Guinea, 1932, 561, t. 109 — *Sideroxylon schlechteri* Krause, Engl. Bot. Jahrb. 58, 1923, 478 — *Pouteria schlechteri* (Krause) Baehni, 1942, 293.

Trees. Branchlets subterete or angular, 1.5—2.5 mm in diam., widened below the nodes, yellowish or greyish or brownish puberulous, glabrescent. *Leaves* alternate, oblong-obovate or elliptic, 9—17.5 by 3—7 cm, apex acute or acutely acuminate, acumen 5—11 mm long, base broadly cuneate; margin undulate, with a narrow intramarginal nerve, membranous or coriaceous, appressedly greyish or yellowish sericeous below, glabrescent, nitidous above; midrib impressed above, minutely crested, prominent below, secondary nerves 7—12, ascending at an angle 55°—70°, curved, archingly joined by some thickened tertiary nerves, impressed above, prominent below, tertiary nervation transverse, descending near midrib, prominulous on either side; petioles terete, 3—10 mm, broadly concave above, ferruginously puberulous, glabrescent. *Flowers* in subsessile, axillary, few-flowered clusters or sometimes along a foliate, axillary shoot; pedicels angular, up to 2 mm long, ferruginously sericeous. Outer *sepals* ovate, 1.5—2 by 1.5—2 mm, apex acute, ferruginously sericeous without, glabrous within, at the top with a bundle of hairs, inner sepals orbicular, 1.5—2 by 1.5—2 mm, apex obtuse, entire or crenulate. *Corolla* 2—3 mm long, not or very slightly exsert, lobes ovate, c. 1 by 1 mm, apex rounded. *Stamens* 1—1.5 mm, inserted slightly below the middle, filaments subulate, c. 0.8 mm long, acute. *Ovary* obovoid, truncate at apex, 0.5—1 by 1—1.5 mm, ferruginously hirsute; style cylindrical, 0.5 mm long, angular, subcapitate and truncate at apex. *Fruits* unknown.

Type specimen: *Schlechter 18856* in B.

Lectotype specimen: *Schlechter 18856* in L.

Distr.: New Guinea.

NEW GUINEA. Northeastern New Guinea, forest on the Saungeuti Etappe, alt. 300 m: *Schlechter 18856* (L, P), fl. Nov.

Remarks: As the type specimen in the Berlin Herbarium has been destroyed during the 1943 bombardement the material in Leiden is chosen to represent the type specimen.

64. P. nitida (Blume) Dubard, 1912, 62 — *Sideroxylon nitidum* Bl., Bijdr., 1825, 675 — *Pouteria duclitan* (Blanco) Baehni, 1942, 283.

Trees, up to 50 m. Branchlets terete or angular, 4—10 mm in diam., yellowish-whitish puberulous, glabrescent. *Leaves* scattered, elliptic, ovate or obovate, (8—)12.5—30(—87) by 5—12(—30) cm, larger in the sterile branches than in the fertile ones, apex acute or obtuse, or acutely or obtusely acuminate, acumen 2—15 mm long, base narrow or broadly cuneate, abruptly narrowed and shortly decurrent along upper side of petiole; margin undulate, with a narrow intramarginal nerve; membranous or chartaceous, ferruginously tomentose on either side when young but soon glabrous, nitidous on either side; midrib canaliculate above, often minutely crested, prominent below, secondary nerves 8—18(—30), ascending at an angle of 50°—80°, straight but curved near margin and archingly joined by a thickened tertiary nerve, prominulous above, prominent below, tertiary nervation generally ascendant near midrib and transverse towards margin of leaf, interjacent nervation reticulate, or the tertiary nervation laxly reticulate over the whole leaf, prominulous on either side; petioles 3—7 cm long, canaliculate above, sometimes in the apical part only, glabrous. *Flowers*

♂, ♀ or ⚥, whitish green, in clusters along leafless or nearly leafless, axillary, up to 12 cm long shoots with stout, yellowish or ferruginously sericeous but ultimately glabrous rachis, or in axillary clusters; pedicels filiform, 2—9 mm long, sparsely whitish or ferruginously sericeous but ultimately glabrous, in fruit pedicel stout, up to 12 by 2.5 mm. *Sepals* ovate, triangular or obovate, 1—1.5 by 1—2 mm, apex obtuse, glabrous within, sparsely whitish sericeous without. *Corolla* 1.5—3.5 mm long, lobes spatulate or obovate, 1.5—2.5 by 1.5—2 mm, apex obtuse. *Stamens* 1.5—2.5 mm long, inserted slightly above the middle, filaments subulate, 1—1.5 mm long, anthers ovoid, 0.5—1 mm long, dehiscing laterally or introrsely, obtuse and mucronate at apex. *Staminodes* subulate or dentiform, 0.5—1 mm long, sometimes the base subhastate, apex obtuse or acute. *Gynaecium* conoid, 1—2 by c. 1 mm, ferruginously hirsute at base, ovary 5-celled; style 5-sided, apex hirsute. *Fruits* obliquely fusiform when one-seeded, but mainly obovoid or ovoid or globose when 2—5-seeded, 1.2—3.5 by 0.5—2.5 cm, with a short remnant of the style, orange in vivo, blackish or brownish when dry, glabrous except for a ring of white hairs around base, nitidous or dull, pericarp solid, woody; seeds oblong-obovoid, 1—2 by 0.7—1.2 by 0.6—1 cm, obtuse at either end, brownish nitidous, testa solid, scar as long as seed, 1—5 mm wide, brownish, dull, albumen copious, cotyledons foliaceous, radicle rather stout, cylindrical, 2—2.5 mm, obtuse or subacute, exsert.

Type specimen: *Blume s.n.* in L.

Vern. names: *Sumatra,* longgang (Toba), balam timah (Simalur), balam (Atjeh), balem timah buluh; *Java,* karèt andjing, kedu (Sund.), ketjik, njato (Djocja), badut, kadut, kēdu, kēmit, koamdu, kēdhu, wedi (Madura), tenelo; *Bali,* kemit; *Christmas Island,* sao; *Lombok,* boodak; *Sumba,* katang; *Borneo,* kambung; *Celebes,* smabiring, taler, beluan, batu, bindjia, langaru, hori, kalengka, tahimanu, tambare pule, tambara pute, kēdēl (Tonsawa), natu bala (Makassar); *Banda,* topolirang; *Sanana,* nahu, par; *Mangoli,* pakatuma-kanu; *Morotai,* ponga mangusu, tilihohuku; *Marampi,* arambahi; *Timor,* ai lianáin.

Use: The wood is solid but is rarely used as it is not durable. Sometimes it is used for the fabrication of matches.

Distr.: Simalur, Sumatra, Siangang Islands, Christmas Islands, Java, Kangean, Zuidwachter Island, Dua Island, Borneo, Celebes, Buton, Philippines (Mindanao, Luzon), Bali, Sumbawa, Sumba, Flores, Tondano Islands, Muna, Sula Islands, Ambon, Wetar, Aru Islands, Morotai, New Guinea.

In the following localities only the collector's numbers are given:

Simalur. f. Lam 1925, 205.
Sumatra. *NIFS bb 5874* (BO, L), fl. July.
Siangang. f. Lam 1925, 206.
Christmas Island. *Andrews 29 & 176* (BM), fl.; *Ridley 95* (NSW) fl. Oct.
Java. *NIFS Ja 2006* (BO, L), Jan.; *NIFS Ja 3623* (BO, L), fl. Sept.; *NIFS Ja 3641* (BO, L), Nov.; *Horsfield s.n.* (BM).
Kangean. f. Lam 1925, 206.
Zuidwachter Isl. f. Lam 1925, 206.
Dua Island. f. Lam 1925, 206.

BAWEAN. *Buwalda 3140* (= *FRI Ja 4222*) (BO, L), Nov.
BORNEO. *NIFS bb 19075* (BO, L), July; *Kostermans 5865* (BO, L), fr. July.
CELEBES. *NIFS bb 29469* (BO, L), fr. Sept.; *Waturandang 30* (= *NIFS Cel./V — 148*) (BO, L), fr. Sept.; *Riedel s.n.* (FI).
BUTON. f. Lam 1927, 472.
MINDANAO. *Hallier 4734* (L), fr. Febr.
LUZON. *Merrill 2793* (BM), fl. July; *Barnes 51* (NSW), fl. Sept.; *Barnes 77* (BM, NSW), fl. Oct.; *Blanco 1* (NSW), fl. May; *Merrill 3413* (BM), fl. Nov.
BALI. *NIFS bb 16994* (BO, L), May.
SUMBAWA. *de Voogd 1920* (BO, L).
SUMBA. *NIFS bb 15497* (BO, L), June.
FLORES. f. Lam 1927, 472.
TONDANO. *NIFS bb 17040* (BO, L), Aug.
MUNA. *NIFS bb 21092* (BO, L), fr. June; *NIFS bb 21311* (BO, L), fr. Aug.
SULA. Mangoli: *NIFS bb 29759* (BO, L), fr. Aug.; *NIFS bb 28795* (BO, L, SING), fr. Aug.
AMBON. *NIFS bb 10137* (BO, L), June.
WETAR. *NIFS bb 27389* (BO, L, SING), fl. April.
ARU ISLANDS. Wokam: *NIFS bb 15069* (BO, L, SING), Febr.
MOROTAI. *NIFS bb 33783* (= *Tangkilisan 89*) (BO, L, LAE), May.
NEW GUINEA. Mt Wakobi: *Atasrip 71* (BO, L).

65. P. longipetiolata (King & Prain) H. J. Lam, 1925, 218, 266 — *Sideroxylon longipetiolatum* King & Prain, Ann. bot. Gard. Calc. 9, 1901, 50, t. 63 — *Pouteria longipetiolata* (King & Prain) Baehni, 1942, 278—379.

Large trees. Branchlets angular or compressed, 3—5 mm in diam., yellowish or brownish white sericeous, glabrescent. *Leaves* scattered, alternate, obovate-lanceolate or elliptic, 8—16(—75) by 3.5—8.5 cm, the leaves of juvenile trees larger than those of mature trees, apex acute, obtuse or acutely or obtusely acuminate, acumen 2—8 mm long, base attenuate, sometimes oblique, decurrent; margin undulate, with a narrow intramarginal nerve; membranous, glabrous except sparsely greyish pilose below along midrib and nerves, glabrescent, nitidous above, dull below; midrib impressed above and minutely crested, prominent below, secondary nerves 9—16, ascending at an angle of 65°—70°, slightly curved or straight and curved at their tips only, indistinctly archingly joined by one or more thickened tertiary nerves but mostly diminishing until inconspicuous, prominent on either side, tertiary nervation reticulate with a few, slender, sinuous, transverse nerves, prominent on either side; petioles 1.5—7 cm long, canaliculate above, greyish sericeous, glabrescent, rugose at base. *Flowers* in axillary clusters or sometimes in clusters along an axillary leafless shoot; pedicels subterete, 4.5—8 mm long, whitish sericeous. *Sepals* ovate or suborbicular, c. 1.5 by 1.2 mm, apex obtuse, whitish sericeous without, glabrous within. *Corolla* 2—3 mm long, lobes oblong, c. 1.2 by 1 mm, obtuse at apex. *Stamens* 1.5—2 mm long, inserted in the basal third, filaments subulate, c. 0.8 mm long, anthers ovoid-compressed, c. 1 mm long, obtuse or obtusely mucronate at apex, dehiscing extrorsely or laterally. *Staminodes* subulate, c. 1 mm long, acute at apex. *Gynaecium* conoid, 1.5—2 mm long, 5-celled, 5-lobed, with an annular 10-lobed disk which bears 10 bundles of ferruginous hairs; style 5-ribbed. *Fruits* not seen, but according to Baehni: ovoid or globose, c. 4 by 2.5—4 cm, 1- or 2-seeded; pericarp fleshy; seeds fusiform, laterally compressed, c. 3 by 1.5 by 1 cm, scar linear, as long as seed.

Type specimen: *Kurz s.n.* in K.

Distr.: Andamans, Burma and Pakistan.

ANDAMANS. South Andaman, Port Blair: *Kurz s.n.* (K), fl.

BURMA. Tenasserim, Mittikit forest: *Falconer 31* (K), fl.

PAKISTAN. Eastern Provinces, Calcutta, Botanical Garden: *Jonardun s.n.* (NSW), fl.

66. P. kaniensis (Krause) H. J. Lam, Nova Guinea 14, 4, 1932, 565, t. 124 — *Sideroxylon kaniense* Krause, Engl. Bot. Jahrb. 58, 1923, 480 — *Pouteria kaniensis* (Krause) Baehni, 1942, 284.

Trees. Branchlets terete or angular, 2—4 mm in diam., ribbed, ferruginously pilose, soon glabrescent and then greyish, distinctly lenticellate. *Leaves* scattered, alternate, obovate, 7—13 by 3.5—5.5 cm, apex obtuse or obtusely acuminate, base cuneate and sometimes oblique, shortly decurrent; margin undulate, with a narrow intramarginal nerve; coriaceous, glabrous, nitidulous above, yellowish sericeous below, sometimes on nerves only; midrib impressed above and minutely crested, prominent below, secondary nerves 8—10, ascending at an angle of 65°—75°, irregularly archingly joined or diminishing until inconspicuous near margin, inconspicuous and prominulous above, prominent below, tertiary nerves laxly reticulate or transverse and subparallel to secondary nerves, sometimes one nerve between two secondary nerves more distinct and parallel to the latter, prominulous above, stronger below; petioles 1.4—2.2 cm long, narrowly canaliculate above, ferruginously sericeous. *Flowers* solitary or in few-flowered clusters, sometimes in clusters along an axillary shoot, 5- or 6-merous; pedicels terete or angular, 5—10 mm long, ferruginously sericeous. *Sepals* ovate or lanceolate, 3—4.5 by 1.5—2.5 mm, apex acute, ferruginously pilose without and with a bundle of ferruginous hairs at apex, glabrous within. *Corolla* c. 7 mm long, lobes lanceolate or ovate, 2.5—3.5 by 1.5—2 mm, apex obtuse or acute. *Stamens* 3—5 mm long, inserted in the lower third, filaments filiform, 2—3 mm long, anthers ovoid-oblong, 1.5—1.8 mm long, apex acute, dehiscing extrorsely or laterally. *Staminodes* linear-lanceolate, c. 3 mm long, acute at apex. *Gynaecium* c. 5 mm long, ovary ovoid-conoid, tapering into style, ferruginously pilose; style stout, cylindrical, glabrous. *Fruits* unknown.

Type specimen: *Schlechter 17892* in B.

Lectotype specimen: *Schlechter 17892* in L.

Distr.: New Guinea.

NEW GUINEA. Northeastern New Guinea, Kani Mts, alt. 600 m, forests: *Schlechter 17892* (B, L, P), fl. July.

Remarks: As the type specimen in the Berlin Herbarium has been destroyed it was necessary to select a new one for which the specimen of Schlechter in Leiden has been chosen.

67. P. sarcospermoides H. J. Lam, Boissiera 7, 1943, 94, f. 5, left — *Pouteria sarcospermoides* (H. J. Lam) H. J. Lam, Blumea 5, 2, 1943, 337.

Trees, c. 10 m. Branchlets slender, terete or compressed, 2—4 mm in diam., glabrous. *Leaves* opposite or subopposite (sometimes alternate ?), oblong or obovate-oblong, 21—26 by 7.5—9 cm, apex obtusely acuminate, acumen 5—10 mm long, base broadly cuneate, shortly decurrent; margin undulate, with a narrow intramarginal nerve; chartaceous, glabrous on either side, nitidulous on either side; midrib impressed and crested above and prominulous, prominent below, secondary nerves 14—17, ascending at an angle of 60°—70°, curved, diminishing until inconspicuous or rarely slightly archingly joined, inconspicuous and slightly grooved above, prominent below but the apical nerves less distinct, tertiary nervation laxly reticulate, perpendicular to midrib near the latter, sinuously transverse near margin, inconspicuous above, prominulous below; petioles 2.5—3.5 cm long, flat above, apical part abruptly narrowed, glabrous. *Flowers* green, in clusters in a many-flowered, axillary, 1—2 cm long raceme, rachis 1—2 cm long, yellowish ferruginously sericeous, pedicels 1—2 mm long, angular, yellowish ferruginously sericeous. *Sepals* elliptic or suborbicular, 2—2.5 by 1.5—2 mm, apex rounded or obtuse, margin membranous, finely ciliate, yellowish ferruginously sericeous without, glabrous within. *Corolla* shortly exsert, 2.5—3 mm long, lobes ovate-oblong, 1—1.5 by 0.8—1.2 mm, apex obtuse. *Stamens* 1.5—2 mm long, inserted near the base, filaments subulate, 1—1.5 mm long, in bud sometimes curved at the top, anthers ovoid-oblong, c. 1.5 mm long, apex of thecae mucronulate, dehiscing extrorsely or laterally. *Staminodes* linear or lanceolate-oblong, base sometimes slightly broadened, 1—1.5 mm long, acute at tip. *Ovary* globose or subglobose, c. 0.5 by 1 mm, glabrous, abruptly attenuate into the stout, c. 2.5 mm long style. *Fruits* unknown.

Type specimen: *Carr 12933* in L.

Distr.: New Guinea.

NEW GUINEA. Southeastern New Guinea, Brown river, along river bank, alt. c. 100 m: *Carr 12933* (BM, L), tree c. 10 m, fl. green, Aug.

68. P. suboppositifolia H. J. Lam, Nova Guinea 14, 4, 1932, 565, t. 125 — *Pouteria suboppositifolia* (H. J. Lam) Baehni, 1942, 413.

Trees, up to 16 m. Branchlets terete, angular near the top, 1.5—4 mm in diam., greyish ferruginously sericeous, glabrescent. *Leaves* opposite or subopposite, ovate, ovate-oblong or elliptic, 7—14 by 2.5—6 cm, apex long obtusely acuminate, acumen 5—12 mm long, base cuneate and sometimes oblique, narrowing into and shortly decurrent along sides of petiole; margin with a narrow intramarginal nerve; chartaceous, nitidous and glabrous above, dull and glabrous below but in the juvenile leaves greyish puberulous along midrib; midrib minutely crested above, prominent below, secondary nerves 9—13, ascending at an angle of 40°—50°, curved, sometimes branched, archingly joined, sometimes diminishing until inconspicuous near margin, prominulous above, tapering towards margin, prominulous below, tertiary nervation transverse but subparallel to the secondary nerves, inconspicuous or absent above, prominulous but distinct below; petioles 2—11 mm long, canaliculate above, glabrous. *Flowers* solitary or in 2-flowered clusters; pedicels angular, 1—2 cm long, yellowish sericeous. *Sepals* elliptic or suborbicular, 6—8 by 5—6 mm, apex obtuse, whitish-yellowish sericeous without, tomentose within. *Corolla* green, 6—9 mm long, lobes suborbicular, 2—3 by 2—2.5 mm, apex subtruncate. *Stamens* 2—2.5 mm long, inserted slightly above the middle, filaments subulate, c. 0.5 mm long, anthers oblong-ovoid, c. 2 mm long, apex obtuse, dehiscing laterally. *Staminodes* narrowly pyramidal, 2—3 mm long, subacute at apex. *Ovary* ellipsoid, 4—5 by 3—4 mm, densely hispidulous; style cylindrical, tapering towards the top, 5—6 mm long, subcostate, apex papillate. *Fruits* red in vivo, ovoid, 6.2—7.5 by 3—4 cm, one-seeded, yellowish tomentose, pericarp fleshy; seeds obpyriform, 4.2—4.7 by 1.8—2.3 by 2—2.2 cm, top obtuse, base subacute, yellowish brown, nitidous, testa rather solid, scar oblong, nearly as long as seed, c. 1.2 cm wide, whitish, albumen copious, cotyledons foliaceous, radicle oblique, cylindrical, c. 6 mm long, obtuse, exsert.

Type specimen: *Lane-Poole 123* in BRI.

Vern. name: yokokoro (Suku dialect).

Distr.: New Guinea.

NEW GUINEA. Southeastern New Guinea, Aroa: *Lane-Poole 123* (BRI), tree 15 m, fr. June; Koitaki, alt. c. 500 m, forest: *Carr 12834* (BM, SING), tree c. 17 m, fr.; ibidem: *Carr 12845* (BM, L, SING), fl. March; ibidem: *Carr 12892* (BM, SING), fl. March.

Remarks: The flowers were unknown and are described from *Carr 12845* in Leiden.

69. **P. oppositifolia** (Ducke) van Royen, nov. comb. — *Syzygiopsis oppositifolia* Ducke, Arch. Jard. bot. Rio de Janeiro 4, 1925, 15.

Medium-sized to large trees. Branchlets angular, 2—3 mm in diam., ferruginously sericeous. *Leaves* opposite or alternate, lanceolate or oblanceolate, 7—18 by 2—5 cm, apex caudate-acuminate, acumen 3—10 mm long, base tapering into petiole; chartaceous, glabrous on either side, nitidous above, nitidulous below; midrib prominent on either side but slightly less above than below, secondary nerves 16—25, ascending at an angle of 70°—90°, curved, diminishing until inconspicuous but also some nerves finely archingly joined, inconspicuous above, prominent below, tertiary nerves transverse, almost perpendicular to midrib and parallel to secondary nerves, absent or inconspicuous above, very slender and prominulous below; petioles 6—12 mm long, broadly grooved above, juvenile ones sparsely ferruginously sericeous, soon glabrescent. *Flowers* in axillary clusters, yellowish or greenish; pedicels angular, 2—5 mm long, ferruginously sericeous. *Sepals* triangular or suborbicular, c. 1.5 by 1.5 mm, ferruginously sericeous without, yellowish sericeous within. *Corolla* c. 3 mm long, ferruginously sericeous without, lobes triangular or ovate, c. 1 by 1 mm, apex obtuse or subobtuse. *Stamens* c. 0.8 mm long, inserted in the upper third, filaments lanceolate, c. 0.5 mm long, anthers ovoid, c. 0.5 mm long, apex mucronulate, dehiscing laterally. *Staminodes* broadly lanceolate, c. 0.6 mm long, crested within. *Ovary* obovoid, c. 1.5 by 1.5 mm, subtruncate, 5-sided, densely ferruginously hispid; style short, c. 0.5 mm long, 5-sided. *Fruits* obovoid-ellipsoid or ellipsoid-oblong, 2—2.5 by 1—1.5 cm, one-seeded, top mucronulate, glabrous except for a ring of ferruginous hairs at base and a few scattered hairs at apex, pericarp fleshy; seeds obovoid, laterally compressed, c. 18 by 11 by 3 mm, apex obtuse, base subobtuse, brown, nitidous, scar linear, as long as seed, white, dull; albumen copious, cotyledons foliaceous, radicle conoid, 1—2 mm long, acute.

Type specimen: *Ducke 17608* in RB.

Distr.: Brazil.

BRAZIL. Rio Tombetas near Para, in not inundated forests: *Ducke 22227* (RB, U), large tree, fl. Sept.; Belem, in not inundated forests: *Ducke 17608* (RB, U), medium sized tree, fl. yellowish, fr. pale yellow; Belem: *Pires & Black 442* (U), juv. fr.

Remarks: By its 5-merous flowers which bear staminodes, the linear scar of the seed, the thin cotyledons of the embryo and the copious albumen this species falls within the limitations defined for *Planchonella.*

The leaves are at the top of the branches, opposite, but already slightly below it they are subopposite or alternate.

This species resembles *P. firma* in the shape of its leaves, *P. velutina* in its fruits and *P. suboppositifolia* in its tertiary nervation as well as in the phyllotaxis, which it shares, however, also with some species of Group 4 and 5. It differs from all species in *Planchonella,* except *P. keyensis,* by the pubescent outer surface of the corolla.

On account of its opposite leaves, the close resemblance to *P. suboppositifolia* regarding the shape and texture of the leaves and its flowers, which are sometimes borne along foliate axillary branches, it is inserted in Group 5.

Group 6.

70. P. obovata (R. Br.) Pierre, Not. bot. Sapot., 1890, 36 — *Sersalisia obovata* R. Br., Prodr., 1810, 530; Domin, Bibl. Bot. 89, 1928, 1060 — *Sideroxylon attenuatum* DC, Prodr. 8, 1844, 178; Baker, Fl. Maur. and Seychelles, 1877, 193 — *Planchonella obovata* (R. Br.) H. J. Lam, 1925, 209 — *Planchonella obovata* H. J. Lam, 1927, 473; Corner, Wayside Trees Malaya, 1940, 603; Wyatt-Smith, Research Pamphlet 4, 1954, 55 — *Pouteria obovata* (R. Br.) Baehni, 1942, 324 — *Pouteria obovata* (R. Br.) Baehni, var. *dubia* Hara, Enum. Sperm. Japon. 1, 1949, 100 — *Planchonella glabra* (Ridley) H. J. Lam, 1925, 217 — *Sideroxylon glabrum* Ridley, J. As. Soc. Str. Br. 61, 1912, 476 — *Selsalisia ferruginea* (Hooker & Arnott) Nakai, Bull. Tokyo Sc. Mus. 22, 1948, 31 — *Sideroxylon ferrugineum* Hooker & Arnott, Bot. Capt. Beechy's Voyage 6, 1841, 266, t. 55 — *Selsalisia ferruginea* (H. & A.) Nakai, var. *dubia* (Koidzumi ex Nakai) Nakai, l. c. 31 — *Sideroxylon dubium* Koidzumi ex Nakai, Rigakkai 26, 5, 1928, 9, *descr.*; idem, Bull. Biogeogr. Soc. Japan 1, 3, 1930, 261, *nomen* — *Selsalisia liukiuensis* (Nakai) Nakai, Bull. Tokyo Sc. Mus. 22, 1948, 31 — *Sideroxylon liukiuense* Nakai, Bot. Mag. Tokyo 33, 1919, 209.

Trees or shrubs, up to 40 m, highly variable in foliar details. Branchlets terete or angular, 2—6 mm in diam., juvenile ones ferruginously sericeous or puberulous, glabrescent. *Leaves* scattered, rotundate or obovate, obovate-oblong, ovate, lanceolate or linear, 6—24 by 1.5—15 cm, in the sterile branches often larger than in the fertile ones, apex rounded, obtuse, acute, or obtusely or acutely acuminate, acumen 2—30 mm, entire or emarginate, base narrow to broadly cuneate, sometimes rounded or abruptly narrowed, decurrent along petiole; margin sometimes undulate, with a narrow intramarginal nerve, membranous or chartaceous, nitidous and glabrous above, ferruginously, blackish or whitish puberulous or sericeous below when young but often soon glabrous; midrib flat above, but very often minutely crested, prominent below, secondary nerves 7—18, ascending at an angle of (35°—)50°—60°, distinct but prominulous above, prominent below, mostly archingly joined but sometimes some nerves diminishing until inconspicuous, tertiary nervation mostly reticulate, subparallel to secondary nerves, sometimes a few irregularly sinuous nerves transverse mainly near the margin, prominulous on either side, but sometimes stronger so and more distinct above; petioles 0.5—5 cm long, flat above, ferruginously or blackish or whitish puberulous or sericeous, or glabrous. *Flowers* green or white, ♀ and ⚥, 5- or 6-merous, in few- to many-flowered clusters, 4—10-flowered with ⚥ flowers, 1—3 flowered with ♀ flowers; ⚥ flowers larger than ♀ flowers; pedicels slender or relatively stout, 2—10 mm long, ferruginously or whitish puberulous. *Sepals* rounded or broadly ovate, 2—3 by 2—3 mm, apex obtuse, whitish, yellowish or ferruginously puberulous without, glabrous within, margins membranous and those of the inner ones ciliate or fimbriate. *Corolla* exsert in the ⚥ flowers, in the ♀ flowers not exsert and in the latter case rarely opening, 3—5 mm long, lobes broadly ovate or oblong, 1.5—2 by 1.5—2.5 mm long, rounded. *Stamens* 2.5—3.5 mm long, inserted slightly below the middle, sometimes absent or rudimentary, filaments filiform, 2—3 mm long, anthers ovoid or oblong, c. 1 mm long, apex obtuse, dehiscing laterally or extrorsely. *Staminodes* 1—1.5 mm long, of different shape, lanceolate, triangular, tridentate, caudate-acuminate or aristate, sometimes absent or rudimentary. *Ovary* conoid or obovoid, c. 1 by 1.5—2 mm, truncate at apex, ferruginously hirsute, 5—10-lobed; style conoid, 5-ribbed, 1.5—2 mm long, capitate. *Fruits* white, yellow, red or blue in vivo, obovoid or globose, 1—1.5 by 1—1.5 cm, 2—5-lobed, 1—5-seeded, pericarp membranous, glabrous; seeds obliquely fusiform, 8—12 by 2—3.5 by 2—3.5 mm, obtuse or subacute at either end, yellow, nitidous, scar as long as the seed, c. 1 mm wide, whitish, albumen copious, cotyledons foliaceous, radicle cylindrical, c. 1 mm long, obtuse at apex, exsert.

Type specimen: *Banks s.n.* in K.

Use: The wood is very pretty and is suitable for cabinet making, carved and turned articles. A decoction of the leaves is drunk for stomachache and for pains in the chest. The bark, after heating over a fire, might be chewed for spruce. Crushed leaves are used as a poultice on the loins for lumbago.

Vern. name: *Bonin,* pare; *Saipan,* lalaha; *Guam,* lalaja; *Liukiu,* jiiki, akatetsu; *Siam,* chan tit saw; *Annam,* choi choi, môe, maha, cây sô douc; *Luzon,* banasi, lamungus, bagatalon, mamangkas, pinis, baloloi, botakdin, bungalong, baloloi, botakdim; *Negros,* bitok, limis, sani; *Panay,* tabakid, tabigei; *Sulu,* magkas, nangka nangka; *Palau,* chalangl, galangel; *Malay Peninsula,* are semenki, medang serai, ara daun ketjil, misi, menasi, nyatoh, nasi nasi merah, toak toak, jawah; *Sumatra,* kaju duren djaluk, binasi, kaju laut, njatu karikit, mentaos batu; *Simalur,* tutum binasi etem, binasi etem; *Bangka,* ngatu labar, pelawan, api api, bernasih; *Billiton,* bungalong, benasi; *Java,* djengkok, karèt pantjal, pantjal, tjengkek, pantjak, djenggot; *Madura,* kedu, njato; *Borneo,* sa malam, njatu karikit, mentaos, batu ketiau, njatoh hitam, yagan, umas umas, monsabundu, gumbirat, mammankas, binasi, njato gambir; *Celebes,* balem timah, sambiring, dihi, dinonsino bérési, kata tanduk, kondole, pada pada, pakang, palolo, podon datu, sokibiri, talambu, tanduk tanduk kapi, tjirinpa, rumu; *Flores,* arnana; *Timor,* koto, maneo, molo, dakah; *Sanana,* sisir; *Ternate,* tollire djahe; *Morotai,* wusi; *New Guinea,* woggoi, silo.

Distr.: Liukiu, Bonin, Mariannas, Carolines, Formosa, Seychelles, India, Pakistan, Burma, Siam, Andamans, Nicobars, Indochina, Hainan, Philippines, Palau Islands, Malay Peninsula, Malaysia, Solomons, Australia.

As this species is found in an area reaching from the Seychelles over southeastern Asia to Formosa and the Solomons and Australia only the localities and the collectors' numbers are given below, including the herbarium in which the material is kept.

Liukiu. *Teruya 27* (SING).

Bonin. *Wilson 8268* (K); *Wright 179* (K, P).

Mariannas. Saipan, *Kanehira 893* (K); Tinian, *Hosokawa 7702* (K); Guam, *without coll. 244* (P).

Formosa. *Odashima & Sata 17811* (S).

Palau. Garasumao, *Takamatsu 1554* (L); Koror, *Kanehira 190* (L); Garudokku, *Takamatsu 1212* (L); *Kanehira 2268* (K).

Carolines. Yap, *Volkens 533* (BM, SING).

Pakistan. East Bengal, *Sinclair 38551* (SING).

Seychelles. *Horne 406* (K).

Andamans. South Andaman, *Parkinson 499* (K).

Nicobars. *Kurz 26070* (BM).

Siam. *Kerr 18503* (K); *Ammandale s.n.* (SING); *Haniff & Nur 4396* (SING); *Kingdom Ward 37454* (SING).

Indochina. Annam, *Clemens & Clemens 3810* (BM, P); *Gaudichaud 283* (P); *de Perey 41199* (P); *de Perey 41241* (P); *Poilane 5828* (P); *Poilane 3043* (P); *Pierre 434* (FI, P); *Balansa 1059* (P); *Bon 1625* (P); *de Perey 434* (P); *Harman 891* (P, SING); Cochinchina, *Thorel s.n.* (P); *Falconer f. 749* (P).

Hainan. *How 73902* (BM, S).

Anambas. *Henderson 20435* (SING), *van Steenis 1330* (BO, L, SING).

Malay Peninsula. Kedah, *Wyatt-Smith 71181* (KEP); *Curtis s.n.* (SING); *Ridley 15861* (SING); *Ridley 17751* (SING); *Ridley 15860* (BM, SING); *Daros 21534* (SING); *Corner s.n.* (SING); *Ridley 15844* (BM); *Sinclair s.n.* (L); *Ridley 15845* (SING); Penang, *Curtis s.n.* (SING); *Foxworthy 1095* (SING); *Curtis 703* (SING); *Curtis 273* (SING); *Curtis 704* (SING); *Nauen s.n.* (SING); *Burkill 3380* (BRI, SING); Perak, *Seimund s.n.* (SING); *Ridley s.n.* (SING); *Corner s.n.* (SING); Trengganu: *Holttum 15204* (SING); Pahang, *Nur 10519* (K, SING); *Nur 11461* (SING); *Henderson 22465* (SING); *Yeob Abdul Rahim 3157* (SING); *Corner 25813* (SING); *Ridley s.n.* (SING); *Ridley 1563* (SING); *Burkill & Haniff 17517* (BRI, SING); *Soh 15721* (SING); *Murdock 317* (SING); *Burkill & Haniff 17613* (SING); *Burkill & Haniff 17645*; *Burkill & Haniff 17233* (SING); Selangor, *Ridley 15770* (K, SING); Setul, *Ridley 14924* (SING); Malacca, *Curtis s.n.* (SING); *Seimund s.n.* (SING); *Holmberg 757* (SING); *Ridley 3196* (SING); *Goodenough 1735* (SING); Johore, *Ridley s.n.* (SING); *Goodenough 2761* (SING); *Kostermans s.n.* (SING); *Corner s.n.* (SING); Singapore, *Ridley s.n.* (SING); *Ridley 5908* (SING); *Ridley 5643* (SING); *Ridley 5643a* (SING); *Ridley 8791* (SING); *Ridley 2764* (BM, SING); *Hamid 2316* (SING); *Sinclair 39598* (L, SING); *King's Coll. 1224* (SING).

Karimun. *Ridley 7110* (BM, SING).

Simalur. *Achmat 1164* (P).

Sumatra. *Rahmat Si Toroes 2186* (SING); *NIFS bb 32334* (BO, L); *NIFS bb 15724* (BO, L); *de Vriese & Teysmann 974* (L); *de Raadt 76* (L).

Bangka. *Kostermans 468* (BO, L, SING); *Beccari s.n.* (FI); *Riedel s.n.* (FI); *Beccari 294* (FI); *Teysmann 11097* (FI); *Teysmann s.n.* (L, P).

Java. *Buwalda 7558* (SING); *Junghuhn s.n.* (L); *HB 2491* (L); *Blume s.n.* (L); *Kostermans 6337* (BO, L); *Cook s.n.* (BM).

Sumba. *Teysmann 10742* (FI).

Borneo. Serawak, *Yakup 1320* (KEP); *Beccari 1744* (FI); *Hose 522* (BM); *Bartlett 1538 K* (BM); *Hewitt S 21* (BM); Sandakan, *Kadir A 2548* (KEP, SING); *Majuyap A 332* (SARF, SING); *Tandom 2836* (K, L); *Apostol 6730* (K, L); *Balajadia 2897* (K, L); *Goklin 2881* (K, L); *Goklin 2406* (K, L); *Orolfo 1450* (K, L); *Kaher 5478* (SING); *Bayah 2624* (K, SARF); *Abubakar 4105* (SING); *Cabiling 3916* (SING);

Mail 3642 (SARF, K); Brunei, *Symington 35653* (KEP); *Paymans bb 34572* (BO, L); without loc., *Korthals s.n.* (L), *Korthals 45* (L); *Korthals 6148* (BO, P).

Celebes. *NIFS Cel./III-42* (BO, L, SING); *NIFS bb 21585* (BO, L, SING); *de Vriese & Teysmann s.n.* (L).

Philippines. Luzon, *Alvarez 22652* (K, L, PNH); *Curran 10474* (NSW, SING); *Quisumbing 2280* (PNH); *Yates 25444* (P); *Curran 10182* (NSW, SING); *Elmer 7904* (FI, NSW); *Sulit 27417* (P); *Loher 13587* (P); *Valera 13843* (L, PNH); *Manzano 26879* (P); *Ramos 27407* (BM, P); *Paraiso 26487* (P); *Paraiso 27321* (P); *Ramos 27116* (SING); *Ramos & Edaño 26330* (P); *Paraiso 27271* (BM, P); *Bernardo 24266* (P); *Edaño 78622* (SING); *Escritot 21169* (L, PNH); *Ahern's Collector 2165* (SING); *Ramos 42249* (SING); *Fajatin 30942* (SING); *Sulit 31087* (SING); *Brown 3483* (SING); *Vidal 1565* (FI, L); *Vidal 1563* (FI, L); *Miranda, Alamgro & Benito 18882* (BM, L, P, PNH); *Elmer 15596* (BM); *Borden 1809* (NSW); *Elmer 6071* (NSW); *Ramos 22380*; Mindoro, *Ramos 39540* (L, P, PNH); Tablas, *Merrill 4163* (L, NSW, P, PNH); Sibuyan, *Elmer 12452* (BM, FI, NSW); Biliran, *Sulit 5356* (L, PNH); Samar, *Ramos 1657* (BM, L, P, PMH); Leyte, *Edaño 41690* (L, P, PNH); Panay, *Martelino & Edaño 35668* (BM, P); Negros, *Tamesis & Azurin 25899* (P); Mindanao, *Elmer 10800* (BM, FI, NSW); Basilan, *Foxworthy 13264* (L, PNH); Jolo, *Klemme 22530* (P); Palawan, *Edaño 35* (SING); *Sulit 3763* (L, PNH); *Sulit 12328* (PNH); *Edaño 14021* (L, PNH); Tawitawi, *Ramos & Edaño 44178* (BM, SING); without loc.: *Vidal 6135, 6134, 6133, 6132* (P); *Cuming 1243* (BM, FI, L, P).

Flores. *NIFS bb 21433* (= *de Voogd 2837*) (BO, L); *NIFS bb 21440* (= *de Voogd 2863*) (BO, L).

Timor. *NIFS bb 17592* (L); *NIFS bb 27121* (BO, L, SING).

Wetar. *NIFS bb 27278* (BO, L, SING).

Muna. *NIFS bb 21712* (BO, L, SING).

Sula Islands. Sanana, *NIFS bb 28762* (BO, L, SING).

Ceram. *de Vriese & Teysmann s.n.* (L); *HB 1947* (L); *Ghesser s.n.* (FI); *Beccari s.n.* (P).

Amboina. *Robinson 1817* (BM).

Aru Islands. Wokam, *NIFS bb 25378* (BO, L, SING); *Beccari s.n.* (FI, P).

Morotai. *NIFS bb 24610* (BO, L).

Misool. *Pleyte 753* (BO, L).

Batanta. *van Royen 3246* (L).

Moluccas, without known island, *Hombron s.n.* (P).

New Guinea. Western New Guinea, *Kostermans 360* (= *NIFS bb 33538*) (BO, L); *Kanehira & Hatusima 13080* (A); *Beccari 181* (A); *Beccari PP 239* (FI, P); *Beccari PP 151* (FI, P); *Beccari s.n.* (FI, P); Northeastern New Guinea, *Hellwig 369* (B, BM); *Warburg 21373* (BM); *Hollrung 388* (P); *Hollrung 12* (P); *Naumann s.n.* (P); *Lewandowsky 46* (NSW, SING); *Weinland s.n.* (SING); *Weinland 234* (SING); *Ledermann 9072* (SING); Southeastern New Guinea, *L. S. Smith NGF 1357* (BRI, L, LAE); *Carr 13075* (BM, SING); *Carr 14109* (BM, SING; *Brass 1576* (P); *Brass 8745* (L); *Turner 12* (BRI); *Cowley 6* (BRI).

Australia. *von Mueller s.n.* (BM, MEL, NSW); *von Mueller 36* (P); *Dallachy s.n.* (BM, P); *Dallachy 17520* (BM); *Michael 1102* (BM), *Michael s.n.* (BRI); *Banks & Solander s.n.* (P); *Banks s.n.* (K), *type specimen*; *Kajewski 1433* (BM, P, S); *L. S. Smith & Webb 3266* (BRI, L); *L. S. Smith & Webb 4000* (BRI, L); *L. S. Smith & Webb 4867* (BRI, L); *Stephens s.n.* (BRI); *Banfield s.n.* (BRI); *Kelly s.n.* (BRI).

Solomons. Malaita, *Walker & White BSIP 89* (BRI).

Remarks: This highly variable species has given rise to a large number of synonyms to which here some have been added, e. g. *Sideroxylon liukiuense*. Though I did not see the material, on account of the description which exactly matches that of *P. obovata*, this species is inserted here.

Sterile specimens of *P. obovata* and *P. obovoidea* sometimes are not easily to separate. Fruiting specimens, however, can be distinguished on account of the fruit. In *P. obovoidea* the stigma in fruit is circularly broadened, but in *P. obovata* the stigma remains narrow and inconspicuous.

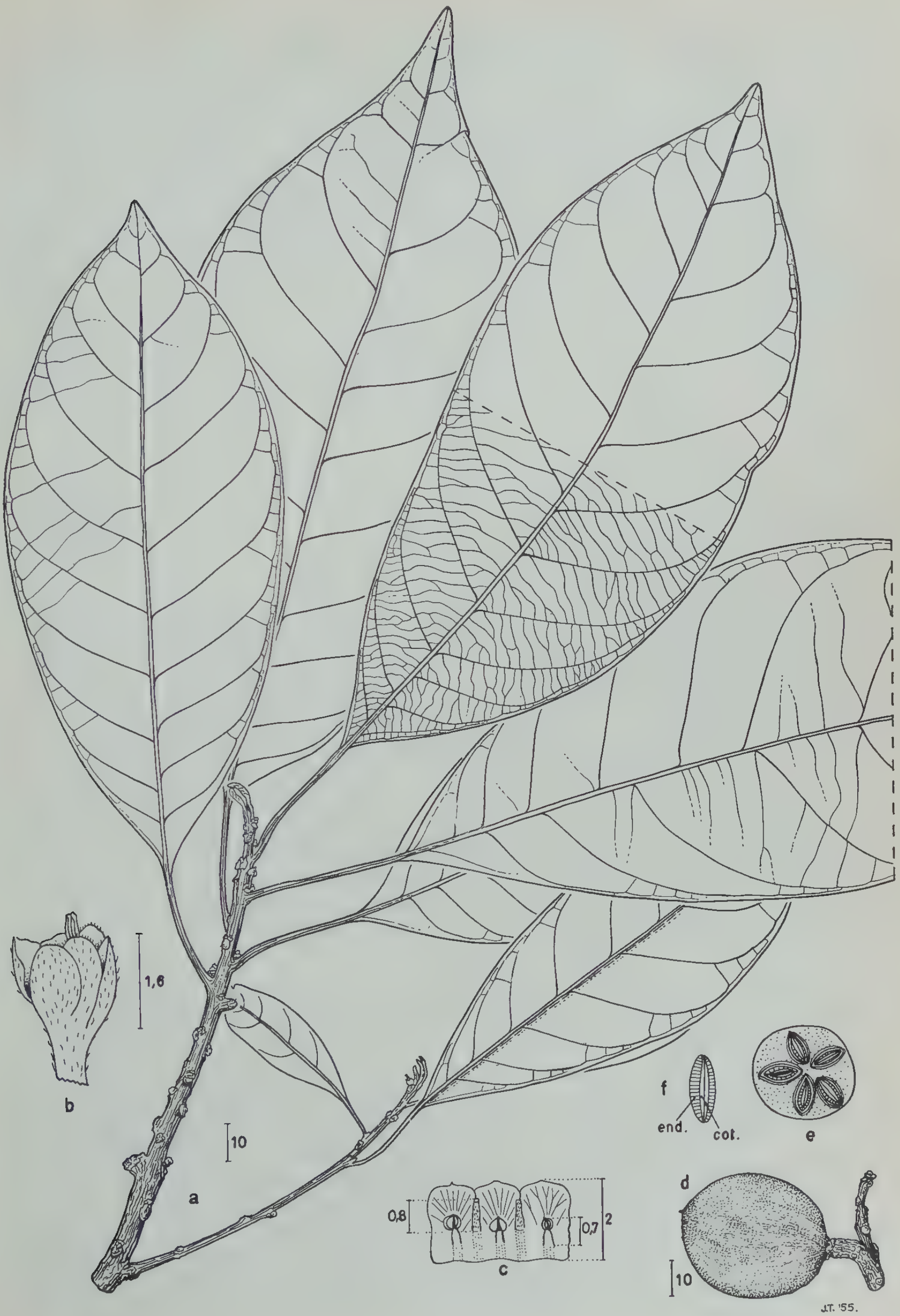
Sterile specimens are sometimes easier to identify when the following remarks are borne in mind.

In *P. obovata* the tertiary nervation is distinctly prominent above, but in *P. obovoidea* these nerves are not, or only very slightly, prominent and often quite inconspicuous. The tertiary nervation in *P. obovoidea* usually shows some more numerous transverse nerves than that of *P. obovata*. In *P. obovoidea* the secondary nerves and leaves often are differently coloured when dry, as the nerves are red against the grey or green leaf. Often they are distinctly curved, but straight nerves are found as well. In *P. obovata* these nerves are rarely differently coloured from the rest of the leaf and are mostly straight and curved in the apical part of the leaf only. However, S-shaped nerves are known. The colour of the leaves of *P. obovata* is either bright green on either side or black or brown and nitidous above and pale greenish or dark green below with a greyish, ferruginous or blackish indumentum. The leaves of *P. obovoidea* are often greyish green or brown, often darker and nitidulous above. In some cases green leaves are found. Neither, or only in a slight degree, can the geographical distribution give a clue to distinguishing the two species when sterile material is involved. *P. obovata* is found from the Seychelles to the Solomons and *P. obovoidea* from Celebes and Java to the Solomons and Fiji. In the eastern parts (New Guinea, Northern Australia, Timor and Ceram), *P. obovata* is characterized by broadly spatulate or rotundate, bright green leaves, but this type is found also in some more western localities. In the northern and western part of its area *P. obovata* is mainly characterized by lanceolate, obtuse, acute or acuminate leaves. This type up to now, is not found in the eastern parts except Ceram, Northern New Guinea and Timor, and as the spatulate or orbicular bright green leaves of *P. obovata* are quite distinct to separate from the greyish, red-veined leaves of *P. obovoidea*, specimens from these regions are easy to identify, but in the other parts it will always be difficult to separate the two species when only sterile material is at hand. Therefore, many specimens included in *P. obovata* might well belong to *P. obovoidea*.

71. P. ripicola van Royen, nov. sp. — *Pag. 432 and fig. 38.*

Trees, c. 15 m. Branchlets terete or angular, 1—5 mm in diam., juvenile ones blackish or greyish sericeous, glabrescent, mature branchlets blackish. *Leaves* scattered, elliptic or subobovate, 10—25 by 4—10 cm, tip obtusely acuminate, acumen 5—25 mm long, base narrowly cuneate, shortly decurrent along petiole; margin with a narrow intramarginal nerve; membranous, subnitidous above, dull below, entirely glabrous but the very young, folded leaves blackish-greyish sericeous; midrib grooved above, sometimes minutely crested in the apical part, prominent below, secondary nerves 6—9, ascending at an angle of 60°—70°, straight but curved at their tips, prominent on either side; petioles 1.2—5 cm long, flat above, glabrous when mature. *Flowers* greenish yellow, in 2- or 3-flowered clusters or solitary; pedicels slender, 2—3 mm long, very sparsely whitish sericeous.

Fig. 38. *P. ripicola*, a. habit, b. flower, c. inner side of corolla, d. fruit, e. transverse section of fruit, f. transverse section of embryo. (*van Royen 3098*).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J.T. '55.

Sepals rotundate or ovate, c. 1.2 by 1.2 mm, obtuse at apex, sparsely yellowish sericeous without, glabrous within, margins of inner sepals membranous and ciliate. *Corolla* 1.5—2.5 mm long, lobes broadly spatulate, truncate and obtusely mucronate at apex. *Stamens* c. 1 mm long, inserted in the basal third of corolla, filaments lanceolate, c. 0.5 mm long, anthers ovoid, c. 0.5 mm long, obtuse and mucronulate at apex, dehiscing laterally or introrsely. *Staminodes* up to 1 mm long, lancolate, truncate at apex. *Ovary* obconoid, c. 1 by 1.5 mm, truncate at apex, pale yellow-brown hirsute, 5-lobed; style cylindrical, 5-ribbed, 1—1.5 mm long. *Fruits* green, globose or subglobose, 3.5—8 by 3—8 cm, slightly 5-lobed, 5-seeded, pericarp spongy, becoming woody, glabrous except for a ring of white hairs at the base; seeds obliquely fusiform, 20—25 by 8—10 by 2—5 mm, subacute or acute at either end, yellow, nitidous, scar as long as seed, c. 1.5 mm wide, greyish, albumen copious, cotyledons foliaceous, radicle cylindrical, c. 2 mm long, obtuse; pedicel of fruits stout, c. 10 by 6 mm, glabrous.

Type specimen: *van Royen 3098* in L.

Distr.: New Guinea.

NEW GUINEA. Western New Guinea, Vogelkop Peninsula, Sorong, Roefei river NW of village, c. 1.5 km from river mouth on riverbank, in primary forest behind mangroves: *van Royen 3098* (L), tree 15 m, lvs green and yellow striped (diseased?), fl. green-yellow, March, fr. globose.

Remarks: The specific epithet has been derived from the habitat of this species as this specimen was growing on the bank of a river with part of its root-system reaching into the brackish water of the river.

At a first glance *P. ripicola* shows some resemblance to *P. obovata* but differs from that species in the fewer secondary nerves of the leaves. Moreover the angle between these nerves and the midrib is larger. The papyraceous texture of the leaf also distinguishes *P. ripicola* from *P. obovata.* The most striking character to keep the two species apart is found in the fruit. In *P. obovata* the fruit has a thin papyraceous pericarp and reaches a size of 1—1.5 cm. The fruit of *P. ripicola,* however, is provided with a thick, in vivo spongy, pericarp which becomes hard after drying. The size of the fruit in this species moreover reaches 3.5—8 cm.

Also in the field the two species are quite distinct, the stem of *P. obovata* being irregularly fluted and often twisted, that of *P. ripicola* being a straight, smooth trunk.

72. P. lifuana (Baillon) Pierre ex Dubard, 1912, 45 — *Sideroxylon lifuanum* Baillon, Bull. Soc. linn. Paris 2, 112, 1890, 890 — *Pouteria bifuana* (Baillon) Baehni, 1942, 300—301.

Trees, 2—10 m. Branchlets subterete, 2—6 mm in diam., sparsely greyish appressedly puberulous, glabrescent. *Leaves* scattered, obovate or elliptic, 5.5—9 by 2.5—4.5 cm, apex rounded or subtruncate, base attenuate, decurrent along petiole; with a narrow intramarginal nerve; membranous or coriaceous, nitidous above, dull below, glabrous on either side except sometimes greyish or wine-coloured sericeous above along midrib; midrib flat above, prominulous below, reddish yellowish on either side, secondary nerves 7—10, ascending at an angle of 50°—60°, straight or sinuous, irregularly archingly joined, prominent on either side, tertiary nervation laxly reticulate, a few nerves subparallel to the secondary ones, prominulous on either side; petioles 8—15 mm long, flat and shallowly grooved above, greyish puberulous. Juvenile leaves linear, 5.5—13 by 0.6—2 cm, apex obtuse, mucronulate, base cuneate, with a distinct intramarginal nerve, coriaceous, nitidous above, nitidulous below, secondary nerves c. 16, ascending at an angle of 50°—60°, straight, sometimes irregularly sinuous, irregularly archingly joined, prominent on either side, tertiary nervation reticulate, prominent on either side; petioles 1—2.5 mm long, grooved above, glabrous. *Flowers* not seen. *Fruits* with a stout, 7—9 by 2—3 mm large, glabrous pedicel. *Sepals* squamiform, 3.5—4.5 mm in diam., greyish subsericeous without, glabrous within. *Fruits* globose or obliquely obovoid, 2.5—3 cm in diam., or c. 3.5 by 1.5 cm, dark olive-green, 1—3-seeded, greyish subsericeous, pericarp ligneous but soft; seeds obliquely compressed ellipsoid, c. 2 by 1.2 by 0.8 cm, apex acuminate, base obtuse, brown, nitidous, scar nearly as long as seed, 1.5—2.5 mm wide, white, albumen copious, cotyledons foliaceous, radicle stout, 1—2 mm long, obtuse, exsert.

Type specimen: *Balansa 1826* in P.

Distr.: Lifu and New Caledonia.

LIFU. without known loc.: *Balansa 1826* (BM, L, P), fr.

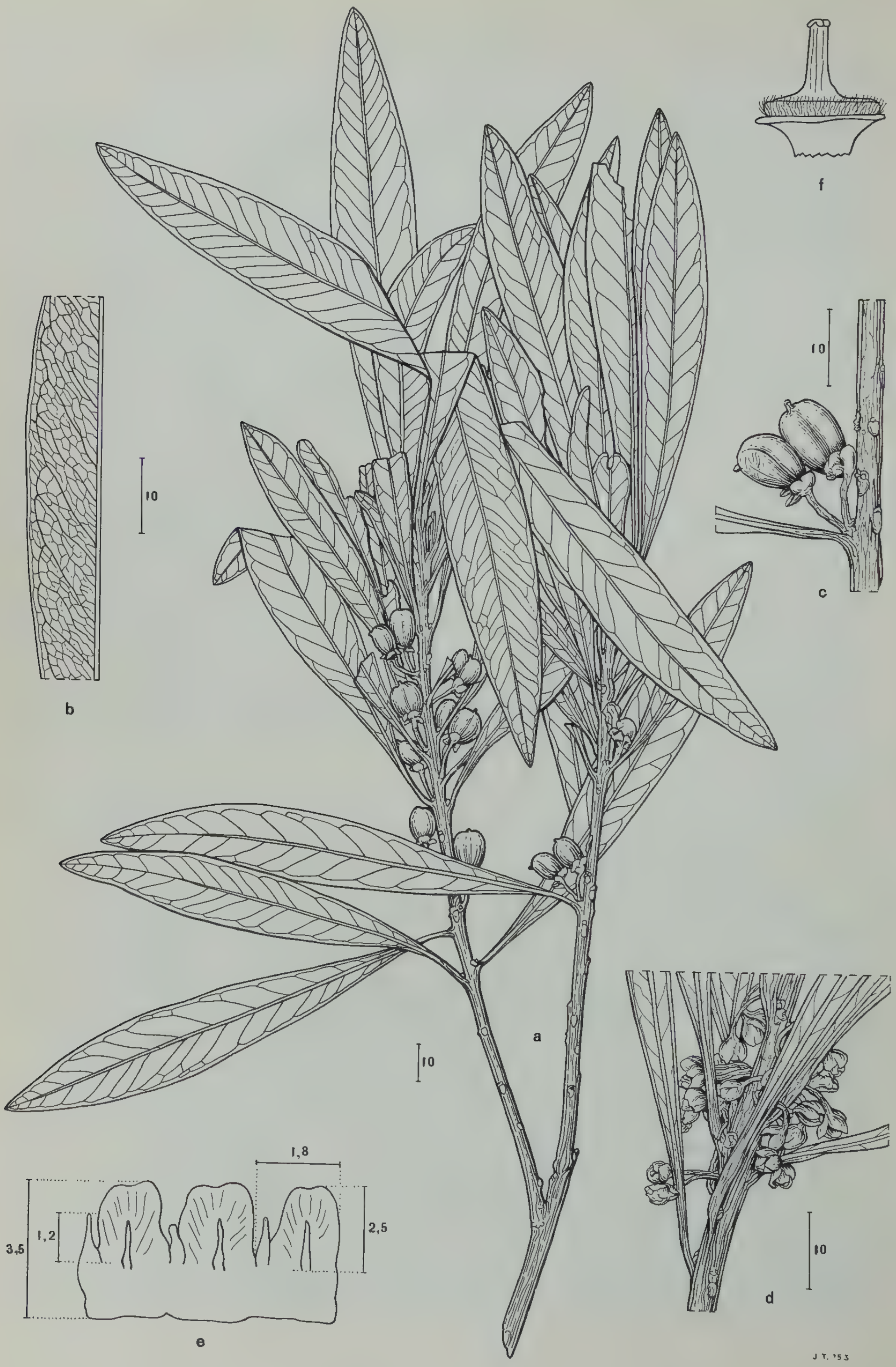
NEW CALEDONIA. Abari forest: *Baumann 14561* (Z), tree 10 m, fr. July; ibidem: *Baumann 14663* (Z), tree 8 m, July; Maitre Island: *Guillaumin & Hürlimann 699* (Z), shrub 2—3 m, Jan.

Remarks: The description of the juvenile leaves given above is prepared from *Guillaumin & Hürlimann 699* where, in one and the same collection, either type of leaves as described are present, and it is expressely stated on the collectors' label that the narrow leaves are young ones.

This species is closely related to *P. obovata* but its fruits are considerably larger and have a subligneous pericarp which is membranous in *P. obovata*. The foliar details resemble those of Group 1, this character being a link between the two groups.

73. **P. clemensii** (Lec.) van Royen, nov. comb. — *Sideroxylon clemensii* Lecomte, Fl. Gén. Indo-Chine 3, 1930, 890 — *Pouteria clemensii* (Lecomte) Baehni, 1942, 310 — *Fig. 39.*

Trees. Branchlets angular, 2—5 mm in diam., greyish sericeous but glabrescent. *Leaves* mainly conferted at tips of branchlets, oblanceolate or elliptic-oblong, 8—15 by 0.8—2.3 cm, apex acute or obtuse, base long attenuate; with a narrow intramarginal nerve; coriaceous, glabrous, nitidous above, nitidulous below; midrib prominent above and minutely crested, prominent below, secondary nerves 10—16, ascending at an angle of 35°—50°, straight or curved, archingly joined, prominent on either side, tertiary nervation laxly reticulate, prominulous above, prominent below; petioles 2—10 mm long, flat above, glabrous. *Flowers* white or greenish white, in few-flowered clusters; pedicels angular, 5—10 mm long, glabrous. *Sepals* 5 or 6, orbicular, 2.5—3.5 mm in diam., glabrous on either side. *Corolla* 3.5—4 mm long, lobes incompletely known but probably orbicular-quadrangular, 2—2.5 by c. 1.5 mm. *Stamens* incompletely known, inserted below the middle. *Staminodes* lanceolate, 1—1.5 mm long, apex acute or long-acuminate. *Ovary* ovoid, up to 1 mm long, c. 2 mm in diam., scattered ferruginously tomentose; disk irregularly lobed; style stout, 5-ribbed, c. 2 mm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long. *Fruits* obliquely obovoid or ovoid, 8—10 by 7—9 mm, apex with an up to 1.5 mm long remnant of the style, 1- or 2-seeded, pericarp membranous, glabrous, nitidous, olivaceous; seeds obliquely fusiform, 6—8 by 3—4 mm, obtuse at tip, subacute at base, brown, nitidous, scar nearly as long as seed, c. 1 mm wide, brownish, albumen copious, cotyledons foliaceous, radicle cylindrical, 1—1.5 mm long, acute, exsert.

Lectotype specimen: *Clemens & Clemens 3340* in K.

Distr.: Hainan and Indochina.

HAINAN. Lingshui, alt. 500 m: *How 73783* (BM, P, S), fr. Oct.; Lokwui, on rocks by stream: *How 72299* (SING), fl. May.

INDOCHINA. Annam, Mt Bai, 25 km from Tourane, close to river: *Clemens & Clemens 3866* (BM, K), fr. May/July, fl. greenish white or white; Tourane: *Clemens & Clemens 3340* (K), fl. May.

Remarks: As Lecomte did not indicate a type specimen from the original material one has been indicated as a lectotype specimen.

74. P. costata (Endlicher) Pierre ex Lam, Blumea 5, 1, 1942, 5 — *Achras costata* Endlicher, Prodr. Fl. Norf. 1833, 49; idem, Icon. Gen. Pl. 1838, t. 83 — *Pouteria costata* (Endl.) Baehni, 1942, 305 — *Sersalisia costata* (Endl.) Domin, Bibl. Bot. 89, 1928, 1062.

Shrubs or trees, 2—20 m. Branchlets slender, angular or terete, 2—6 mm in diam., youngest parts minutely ferruginously sericeous or greyish tomentose, glabrescent. *Leaves* scattered, subconferted near tips of branchlets, variable in shape and size, sometimes even in the same specimen, but mostly oblong or oblong-obovate, 28—18(—66) by 1.5—8(—24), apex rounded, subrotundate or emarginate, base cuneate and decurrent; with a lighter coloured, narrow, intramarginal nerve; subcoriaceous, sparsely ferruginously or yellowish sericeous below when young but glabrescent except along midrib; midrib flat above, prominulous or prominent below, secondary nerves 8—13(—26), ascending at an angle of 50°—60°, straight or curved, irregularly archingly joined, prominent on either side, tertiary nervation mostly reticulate and parallel to the secondary nerves or parallel to the latter only, and sometimes one nerve between each pair of secondary nerves more distinct and passing into the marginal arch, enlarging the number of secondary nerves up to 26, and slightly less prominent than the secondary ones, sometimes tertiary nervation transverse; petioles angular, 0.7—5.5 cm long, flat or slightly crested above, sometimes narrowly winged, glabrous. *Flowers* white or greenish white, in few-flowered clusters; pedicels angular, 2—8 mm long, densely or sparsely sericeous. *Sepals* 4 or 5, subrotundate, 2—3.5 mm in diam., sparsely whitish sericeous without, glabrous within, margins scarious, inner sepals often minutely fimbriate. *Corolla* 1—4 mm long, lobes lanceolate-oblong, 1.5—2 by 1.5—2 mm, apex rounded or subacute. *Stamens* 1.5—2 mm long, inserted in the basal third, sometimes sterile, filaments ribbon-shaped, c. 1 mm long, anthers ovoid, 0.5—1 mm long, apex obtuse or subacute, dehiscing laterally, base of thecae obtuse. *Staminodes* lanceolate or subulate, 0.5—1 mm long, acute at apex. *Ovary* 4- or 5-celled, compressed globose, c. 1 by 1.5—2.5 mm, slightly 4- or

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Fig. 39. *P. clemensii,* a. fruiting branch, b. leaf, c. fruits, d. flowering branch, e. part of corolla, inside, f. gynaecium. (*Clemens 3866*).

5-angled, yellowish pubescent with larger hairs on the margins; style stout, broadly conoid or cylindrical, c. 1 mm long, truncate, 4- or 5-grooved. *Fruits* green or brown, globular or 4- or 5-sided when 4- or 5-seeded, ovoid or oblong, or turbinate and umbonate when 1- or 2-seeded, sometimes obliquely fusiform-ovoid, 2—7 by 1.5—6 cm, pericarp hard, blackish or brownish, with whitish, ferruginous or brownish tomentose indumentum, glabrescent; seeds obliquely ellipsoid, 1.4—2.4 by 0.5—1 by 0.3—0.7 cm, compressed, falcate at tip, obtuse at either end, yellowish, nitidulous, testa thin, scar linear, narrow, nearly as long as seed, 1—2 mm wide, albumen copious, cotyledons foliaceous, radicle cylindrical, 1—2 mm long, obtuse, exsert.

Type specimen: *Bauer s.n.* in W.

Distr.: New Zealand, Norfolk Island, New Hebrides, Fiji, Samoa, Tonga, Cook Islands, Tuamotus, Tahiti, Tubuai Islands.

Var. **costata** — *Planchonella costata* (Endl.) Pierre, var. *austromontana* H. J. Lam, l. c. 1942, 5 — *Pouteria costata* (Endl.) Baehni, var. *austromontana* H. J. Lam, Baehni, 1942, 305.

Leaves 5—15 cm long, coriaceous, obovate, apex rounded or, rarely, subacute, base attenuate and decurrent; secondary nerves 11—26, close together, hardly separable from the almost equally strong and parallel nerves. *Fruits* up to 3.5 by 2.5 cm.

Type specimen: *Bauer s.n.* in W.

Vern. names: bastard ironwood, shark wood.

Distr.: New Zealand (northern part of North Island), Norfolk Island, Fiji.

NORFOLK. without loc.: *Bauer s.n.* (W), fl. & fr. Oct.; igidem: *MacComish 59* (NSW), fl. Oct.; ibidem: *Robinson s.n.* (NSW), fr.

NEW ZEALAND. North Island, Little Barrier Island: *Cheeseman s.n.* (BM), fl.; ibidem: *Shakespear s.n.* (NSW), fl.; without loc.: *Kirk 118* (BM), fr.; ibidem: *Bauer 88* (BM).

FIJI. f. Lam 1942.

Var. **vitiensis** (Gray) H. J. Lam, l. c. 1942, 7 — *Sapota ? vitiensis* A. Gray, Proc. Am. Ac. Sc. 5, 1862, 328 — *Pouteria costata* (Endl.) Baehni, var. *vitiensis* H. J. Lam, Baehni, 1942, 305.

Leaves 7—15 cm, chartaceous or subcoriaceous, elliptic or oblong or sublanceolate, the smaller ones obovate, base more or less abruptly decurrent, apex rounded, sometimes bluntly acute; secondary nerves rather wide apart, 8—10, the tertiary ones a little but distinctly more slender, united into a longitudinally stretched reticulation, parallel to the secondary nerves, but sometimes some nerves transverse. Mature *fruits* up to 3.5 by 2.5 cm, with fleshy glabrous pericarp.

Type specimen: *Wilkes s.n.* in US, from Fiji.

Vern. name: nggalaka (Fiji).

Distr.: New Zealand (North Island), New Hebrides (Tana), Fiji (Vanua Levu, Vanua Mbalavu, Viti Levu, Taveuni, Vanua, Ovalau, Moala, Fulanga), Samoa (Savaii), Tonga (Vavau, Tongatabu), Cook Islands (Rarotonga), Tuamotus (Makatea), Tahiti, Tubuai Islands (Rurutu, Tubuai).

NEW ZEALAND. North Isl., Auckland, Waitakerei: *Petrie s.n.* (NSW), fr.; Whangarei: *Drummond s.n.* (NSW), fr. June.

TONGA ISL. without known loc.: *Cook s.n.* (BM), fl.

NEW HEBRIDES, FIJI, SAMOA, COOK ISLANDS, TUAMOTUS, TAHITI and TUBUAI ISLANDS. f. Lam 1942.

Remarks: *A. C. Smith 8298* (Taveuni, tree 20 m, fl. Aug.) probably belongs to this variety also, but since no fruits are present its definite status is unknown.

Var. **smithii** van Royen, nov. var. — *Pag. 432.*

Leaves 19—65 by 7—17 cm, subcoriaceous, elliptic to obovate, base subabruptly decurrent, apex rounded, sometimes bluntly acuminate, secondary nerves 10—27, tertiary nerves distinct, transverse, the interjacent reticulate nervation outnumbering the transverse nerves. Mature *fruit* with ligneous, densely reddish or whitish tomentose pericarp, ellipsoid or obovoid, up to 7 by 6 cm.

Type specimen: *A. C. Smith 6368* in L.

Distr.: Fiji.

FIJI. Vanua Levu, Mathuata, Seangganga Plateau, in drainage of Korovuli river, vicinity of Natua, alt. 100—200 m, patches of forest in open rolling country: *A. C. Smith 6906* (L, US), tree 10 m, fl. & fr. Nov./Dec.; ibidem, southern slope of Mt Numbuiloa, east of Lambasa, alt. 100—350 m, open forest: *A. C. Smith 6368* (L, US), tree 20 m, fr. brown, Oct./Nov. — Taveuni, valley between Mt Manuka and Koroturanga, east of Wairiki, alt. 300—600 m, dense forest: *A. C. Smith 8137* (L, US), tree to 20 m, fr. Aug.; ibidem, alt. 600—700 m: *A. C. Smith 8276* (L, US), tree 20 m, fr. obovoid, up to 7 by 6 cm — Viti Levu, Namosi, hill east of Wainikoroiluva river, near Namuanamua, alt. 50—200, dense forest: *A. C. Smith 9049* (L, US), tree 20 m, fr. green, with close brown indument, Oct.

Remarks: This variety differs from the other three in the woody pericarp of the fruit which bears moreover, a reddish or whitish pubescence.

Var. **umbonata** van Royen, nov. var. — *Pag. 432.*

Leaves 9—66 by 4—24 cm, subcoriaceous, oblong, base cuneate, subabruptly decurrent, apex obtusely subacuminate, secondary nerves 9—12, tertiary nerves stout, mostly reticulate-parallel to secondary nerves but some nerves subtransverse. Mature *fruit* turbinate, with flattened apex and umbonate, up to 5 by 5 cm, with a sparse brownish tomentum.

Type specimen: *A. C. Smith 8807* in L.

Distr.: Fiji.

FIJI. Viti Levu, Namosi, valley of Wainambua Creek, south of Mt Naitarandamu, alt. 250—350 m, dense forest: *A. C. Smith 8807* (L, US), tree 20 m, fr. Oct.; hills east of Wainikoroiluva river, near Namuamua, alt. 50—200 m, dense forest: *A. C. Smith 9026* (L, US), tree 20 m, fr. dull green with close brown indument, up to 5 by 5 cm, turbinate, umbonate on the flattened apex, fr. Oct.; hills bordering Wainavindrau Creek, in vicinity of Wainimakutu, alt. 150—250 m, dense forest: *A. C. Smith 8852* (L, US), tree 20 m, fr. brown, borne on branchlets below leaves, larger leaf-blades up to 65 by 24 cm, fr. Sept./Oct.

Remarks: This variety differs from the three other varieties by the umbonate fruits.

75. P. microphylla Pierre ex Dubard in Lecomte, Not. Syst. 2, 1913, 82, *descr.*; Pierre, Not. bot. Sapot., 1890, 36, *nomen*; Guillaumin, Ann. Mus. col. Mars., sér. 2, 9, 1911, 287, *nomen*; Dubard, 1912, 45, *nomen*; Däniker, Vierteljahrsschr. Naturf. Ges. Zürich 78, 1933, 354 — *Pouteria microphylla* (Pierre) Baehni, 1942, 373 — *Achras costata* Pancher & Sebert, Bois Nouv. Caléd., 1874, 193.

Trees, 5—6 m. Branchlets terete or subterete, 2—3 mm in diam., ferruginously sericeous, glabrescent. *Leaves* scattered, sometimes subconferted near tips of branchlets, obovate-lanceolate, 4.5—8 by 1—2 cm, apex obtusely acuminate, gradually attenuate towards base, tapering into petiole; with a stout, yellow, intramarginal nerve, coriaceous, glabrous, nitidous above, ferruginously or greyish tomentose below, glabrescent except along midrib and nerves; midrib prominulous above, prominent below, yellowish with a reddish tinge, secondary nerves 6—12, ascending at an angle of 35°—50°, straight, branched near margin and archingly joined, prominent on either side, tertiary nervation laxly reticulate, prominent on either side; petioles 5—10 mm, flat above, whitish or ferruginously tomentose or sericeous. *Flowers* in few-flowered clusters; pedicels angular, 3—5 mm long, whitish ferruginously sericeous. *Sepals* ovate or orbicular, 2.5—3 by 2.5—3 mm, apiculate at apex, inner ones with membranous margins, yellowish sericeous without, glabrous within. *Corolla* seen in undeveloped state only, c. 1.5 mm long, lobes orbicular, c. 1 by 1 mm, truncate at apex, apical margin ciliate. *Stamens* c. 0.5 mm long, inserted in the lower fourth, for the rest incompletely known, sometimes reduced. *Staminodes* lanceolate or pandurate, 0.5—0.8 mm long, acute at apex. *Ovary* conoid or ovoid, c. 1 by 1 mm, 5-lobed, ferruginously hirsute; style stout, 5-sided, c. 1 mm long. *Fruits* obliquely obovoid-ellipsoid, 0.8—1.5 by 0.5—0.9 cm, 1- to 3-seeded, crowned by the persistent, up to 4 mm long style, ferruginously puberulous, pericarp thin, submembranous, ferruginously sericeous or tomentose; seeds ellipsoid up to 10 by 4 by 3 mm, obtuse at either end, brownish, nitidous, scar as long as seed, 2—3 mm wide, whitish, dull, embryo unknown.

Type specimen: *Balansa 3152* in P.

Distr.: New Caledonia and surrounding islets.

ILE ART. without known loc.: *Balansa 3152* (L, P), tree 5—6 m, fr. June.

NEW CALEDONIA. Kanala: *Vieillard 2897* (K, L, P), fl.; Mt Tiebaghi, high shrub: *Däniker 1468* (Z), fl. March; without loc.: *Petit 58* (P).

Remarks: The description of the fruit is drawn up from *Vieillard 2897* in G.

The specific epithet *costata* of Pancher & Sebert (1874) can not be used owing to the earlier epithet *costata* Endlicher (1833) and which represents *Planchonella costata* (Endlicher) Pierre.

76. P. vitiensis Gillespie, B. P. Bish. Mus. Bull. 74, 1930, 11, f. 12 — *Planchonella oxyedra* (Miq.) Dubard, Lam, Blumea 5, 1, 1942, 13, *p.p.* — *Pouteria oxyedra* (Miq.) Baehni, 1942, 315, *p.p.* — *Pouteria vitiensis* (Gillespie) Degener, Nat. South Pacific Exped., Fiji, 1949, 294.

Trees 5—20 m. Branchlets terete, 1.5—4.5 mm in diam., juvenile ones ferruginously puberulous, glabrescent. *Leaves* conferted near tip of branchlets or scattered, elliptic, elliptic-obovate, obovate or obovate-oblong, 4—10 by 1—3 cm, apex indistinctly obtusely acuminate, base narrowly cuneate, not clearly marked against petiole; with a narrow but distinct intramarginal nerve; membranous, coriaceous or chartaceous, juvenile leaves ferruginously hirsute on either side but soon glabrous, nitidous above, dull below; midrib prominulous above and still less prominent towards apex, whitish or reddish, prominent below and also whitish or reddish, secondary nerves 6—10, ascending at an angle of 45°—60°, straight, archingly joined, prominulous but distinct on either side, tertiary nervation reticulate, conspicuous above, less distinct below, petioles 2—10 mm long, not distinctly marked against the limb, flat above, glabrous. *Flowers* yellow, in few-flowered clusters, ♀ or ⚥ (and ♂ ?); pedicels slender, 3—8 mm long, whitish or ferruginously sericeous. *Sepals* broadly ovate or orbicular, c. 1 by 1 mm, fleshy, glabrous on either side, margin of inner sepals ciliate. *Corolla* 1—1.5 mm long, lobes broadly ovate, c. 0.7 by 1 mm, rounded at apex. *Stamens* known in a reduced form only, inserted in the basal fourth. *Staminodes* dentiform, c. 0.2 mm long. *Gynaecium* conoid, 1—2 mm long, glabrous; disk ferruginously hirsute; ovary 5-celled; style with 5 stigmas. *Fruits* dark brown or green and sometimes tinged with red, oblong-ovoid, often oblique, 1.5—2 by 0.7—1.1 by 0.5—0.8 cm, 1- or 2-seeded, acute, with a short remnant of the style, glabrous, except for a ring of ferruginous hairs at base, pericarp ligneous, thin; seeds obpyriform, 1.2—1.5 by 0.5—0.8 by 0.4—0.6 cm, apex obtuse or subacute, base acute, brownish but yellowish towards scar, nitidous, scar as long as seed, 2—2.5 mm wide, greyish, dull, albumen copious, cotyledons foliaceous, radicle stout, ovoid, c. 0.5 mm long, obtuse at apex, exsert.

Type specimen: *Gillespie 4546* in BISH.

Vern. names: vatuvilakia, mbaumbulu.

Distr.: Fiji.

FIJI. Ovalau, mountains c. 4.5 km NW of Levuka, alt. 150 m: *Gillespie 4546* (BISH, L), fl. & fr. Febr.; summit of Mt Tana Lailai, alt. c. 500—550 m, dense bush and thickets of crest: *A. C. Smith 7700* (L, US), tree 8 m, fr. June, green becoming red — Viti Levu, Serua, vicinity of Ngaloa, alt. 0—150 m: *Degener 15141* (L, S), tree 5 m, fr. dark brown; ridge from Mt Namama, east of Nandarivatu towards Mt Tomanivi (Mt Victoria), alt. 1050—1120 m, dense forest: *A. C. Smith 5694* (L)L, fr. Aug.; Mba, eastern slopes of Mt Koroyanuti, Mt Evans Range, alt. 950—1050 m, dense low forest: *A. C. Smith 4121* (L), tree 5 m, fr. green; Mba, northern portion of Mt Evans Range, between Mt Vatuyanitu and Mt Natondra, alt. 700—900 m, dense forest: *A. C. Smith 4382* (L), tree 20 m, fr. green, tinged with dull red; Mba, ridge between Mt Nanggarana-mbulata (= Lomalangi) and Mt Namama, east of Nandarivatu, alt. 1050—1120 m, dense forest: *A. C. Smith 4990* (L), tree 10 m, fr. June.

Remarks: Though this species closely resembles *P. linggensis* it can be distinguished from that species by the glabrous sepals, the smaller number of secondary nerves (6—10 against 10—20), the smaller fruit (up to 2 by 0.8 cm), the shorter style (c. 1 mm), the often red midrib of the leaf, the mostly smaller leaves and less distinct obtusely acuminate apex of the leaf. The sepals are glabrous on either side, contrary to what has been described by Gillespie who states them to be densely hirsute without. Even in the type specimen this it not the case.

The tertiary nervation resembles that of *P. myrsinoides* and *P. reticulata, P. dictyoneura* and *P. cinerea* and it is only on account of the fimbriate margin of the inner sepals that it is inserted here. The foliar details once more show the close affinities of the different groups.

77. P. pyrulifera (Gray) H. J. Lam, nov. comb. — *? Sapota pyrulifera* A. Gray, Proc. Am. Acad. Sc. 5, 1862, 328 — *Planchonella oxyedra* (Miq.) Dubard, Lam, Blumea 5, 1, 1942, 13, *p.p.* — *Pouteria oxyedra* (Miq.) Baehni, 1942, 315, *p.p.* — *Fig. 40.*

Trees, c. 13 m. Branchlets terete, subcompressed in the apical part, 2—4 mm in diam., ferruginously tomentose, glabrescent. *Leaves* scattered,

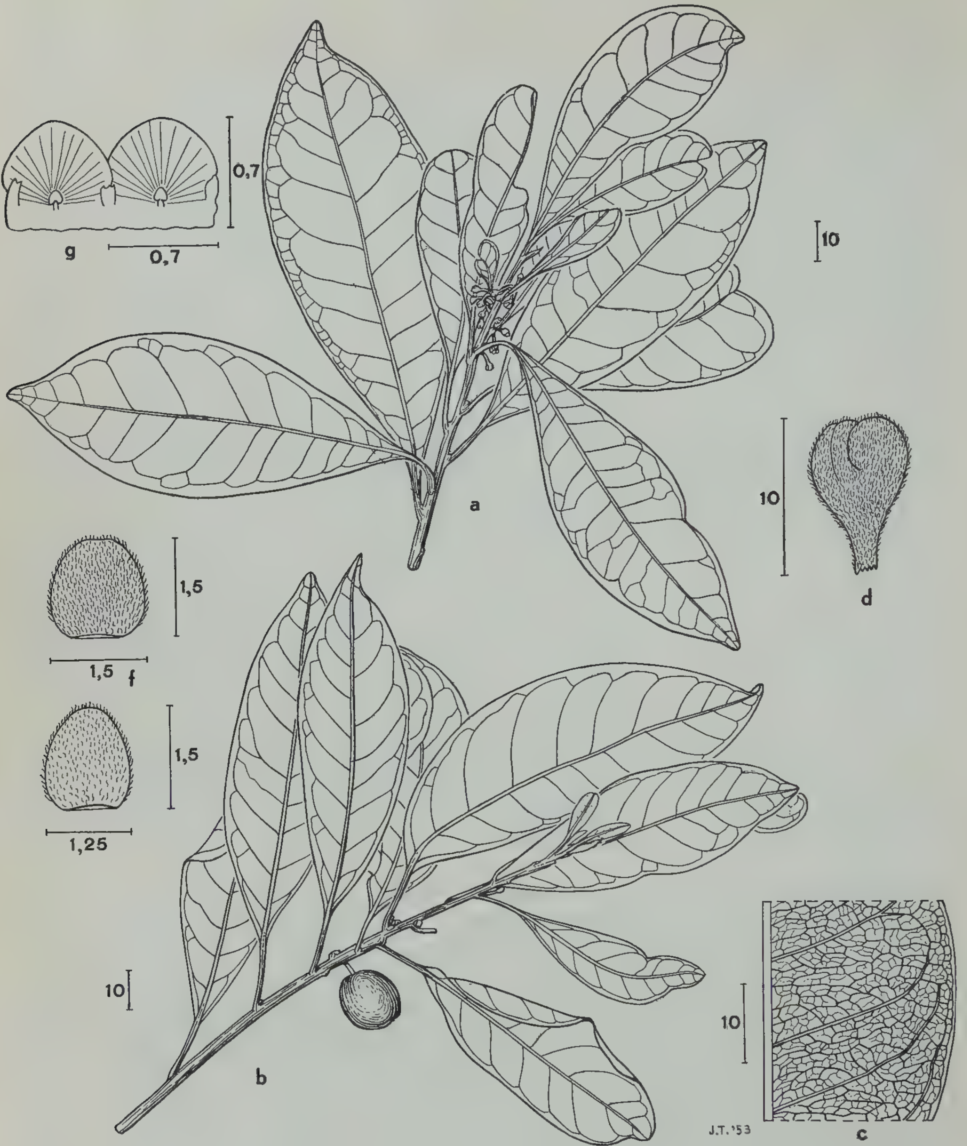


Fig. 40. *P. pyrulifera*, a. habit, b. branch with fruit, c. part of leaf, d. flower-bud, e. sepal, outside, f. inner sepal, outside, g. corolla, inside. (*A. C. Smith 920*, b. after *Degener & Ordonez 13965*). e. is the drawing below f. In d–f only very young sepals and bud are drawn.

elliptic or subobovate, 5—16 by 3—5.5 cm, apex obtuse or indistinct obtusely acuminate, base cuneate, decurrent; with a narrow intramarginal nerve; chartaceous or coriaceous, juvenile ones densely ferruginously tomentose on either side, nitidous above, dull below; midrib flat above and minutely crested, often so in the apical parts only, yellowish, reddish or yellowish reddish above, mostly reddish below, secondary nerves 8—10, curved, ascending at an angle of 60°—80°, archingly joined, prominent on either side, tertiary nervation sometimes transverse near margin and some nerves recurving near midrib, otherwise reticulate, prominent on either side; petioles 1—1.2 by c. 0.15 cm, flat above, juvenile ones ferruginously tomentose but very soon glabrous. *Flowers* yellow, in few-flowered clusters, 4—6-merous, ♀ or ⚥; pedicels terete, 2—4 mm long, ferruginously or yellowish or whitish appressedly tomentose as is the bud. *Sepals* ovate or subovate, inner sepals cordate or obovate, c. 1.5 by 1.5 mm, apex obtuse or bluntly acuminate, sepals when mature glabrous on either side, margin ferruginously or whitish ciliate. *Corolla* c. 1.2 mm long, lobes suborbicular, 0.7—1.2 mm in diam. *Stamens* known in a reduced state only, inserted near base. *Staminodes* lanceolate, 0.2—0.4 mm long, apex obtuse, entire or with 2 or 3 obtuse tips. *Gynaecium* ovoid, 1—1.5 by 1—1.5 mm; ovary 4- to 6-celled, ferruginously hispidulous at base, 1—1.5 by 1—1.5 mm. *Fruits* ellipsoid-globose, 10—15 by 8—15 mm, 1—6-seeded, brownish purple or purplish black, glabrous, pericarp thin, chartaceous; seeds obliquely fusiform, c. 10 by 5 by 5 mm, with a curved obtusely acuminate tip, obtuse or subacute at the basal end, scar narrowly ovate, c. 8 by 1.5—2.5 mm, embryo unknown. *Pedicel* of fruits slender, terete, 8—10 by c. 1 mm, sparsely tomentose or glabrous, calyx with 1—1.5 mm long lobes.

Type specimen: *Wilkes s.n.* in US.

Vern. name: yawe.

Distr.: Fiji (Viti Levu, Vanua Levu, Taveuni, Ovalau).

Fiji. Viti Levu, Tholo West, vicinity of Mbelo, near Vatukorasa, alt. 20—300 m, in forest: *Degener 15290* (A, BISH, K, L, S), tree 13 m, fr. May — Vanua Levu, Thakaundrove, Savu Savu Bay, alt. 0—400 m, in forest of Vatunivuamonde Mt: *Degener & Ordoñez 13965* (K), tree 3 m, fr. dull purplish black, Dec./Jan. — Taveuni, borders of lake east of Somosomo, alt. 700—900 m: *A. C. Smith 920* (L, S), tree 6 m, fl. yellow, Dec.; slopes of Mt Manuka, E of Wairiki, alt. 300—600 m, dense forest: *A. C. Smith 8169* (L, US), tree 25 m, fl. white, Aug.; ibidem: *A. C. Smith 8322* (L, US), tree c. 25 m, fr. purple or black, Aug. — Ovalau, without known loc.: *Wilkes s.n.* (GH, US), fr. — without known loc.: *Graeffe 40* (?) (BM), fl.

Remarks: This species was not considered by Lam (1942) and Baehni (1942) to represent a separate species and both authors merged it with *P. linggensis*. Yet there are ample differences between the two species, viz. the longer petioles of the leaves of flowering specimens, the smaller number of curved secondary nerves, which are distinctly archingly joined, and the tertiary nervation which shows a tendency towards a transverse position though the number of transverse tertiary nerves is rather small compared with the interjacent reticulate tertiary nervation. On rare occasions in *P. pyrulifera* one of the tertiary nerves between each pair of secondary nerves is more distinctly developed and subparallel to the secondary nerves, as is often found in *P. linggensis*. Other differences are the reddish lower surface of the midribs of the leaves in *P. pyrulifera*, which is sometimes also yellowish coloured. Another difference is found in the fruit, the one in *P. pyrulifera* being globose-ellipsoid, while in *P. linggensis* its shape is narrowly ellipsoid or fusiform. Moreover the fruit of *pyrulifera* is smaller than that of *P. linggensis*.

These details given above form ample reason to distinguish *P. pyrulifera* from *P. linggensis.*

78. **P. linggensis** (Burck) Pierre, Not. bot. Sapot., 1890, 35 — *Sideroxylon linggense* Burck, Ann. Jard. bot. Bzg 5, 1886, 15 — *Planchonella oxyedra* (Miquel) Dubard, 1912, 50, *p.p.*; Lam, Blumea 5, 1, 1942, 13, *p.p.*; Wyatt-Smith, Research Pamphlet 4, 1954, 56 — *Pouteria oxyedra* (Miq.) Baehni, 1942, 315, *p.p.* — *Chrysophyllum curtisii* King & Gamble in King's Fl. Mal. Pen., J. As. Soc. Benghal 64, 2, Extra 17, 1905, 159 — *Planchonella littoralis* (Ridley) H. J. Lam, 1925, 216 — *Sideroxylon littorale* Ridley, Fl. Mal. Pen. 2, 1923, 259 — *Planchonella discolor* Pierre, Not. bot. Sapot., 1890, 36, *nomen* — *Lucuma ? discolor* Baillon, Bull. Soc. linn. Paris 2, 118, 1891, 935, *descr.* — *Pouteria discolor* (Baillon) Baehni, 1942, 337 — *Planchonella viridis* Pierre, Not. bot. Sapot., 1890, 36; Guillaumin, Ann. Mus. col. Mars., sér. 2, 9, 1911, 287 — *Sideroxylon pittosporifolium* Elmer, Leafl. Phil. Bot. 3, 1910, 872 — *Sideroxylon albocostatum* Krause, Engl. Bot. Jahrb. 58, 1923, 479.

Shrubs or trees, up to 33 m, highly variable in foliar details. Branchlets terete, sometimes slightly compressed, especially in the youngest parts, 1—3 mm in diam., sparsely whitish or ferruginously sericeous, glabrescent. *Leaves* scattered, obovate, elliptic, elliptic-oblong, oblanceolate or lanceolate, 5—15(—30) by 1.3—5(—7.5) cm, apex obtusely or acutely acuminate, acumen 2—22 mm long, base narrowly cuneate, tapering into petiole; margin undulate, with a narrow intramarginal nerve, membranous or coriaceous, reddish ferruginously or whitish puberulous on either side when young but mature ones glabrous or sparsely puberulous below, nitidulous above, dull below; midrib minutely crested and prominulous or impressed above, prominulous below, secondary nerves (8—)10—12(—20), but sometimes up to 25 as some of the tertiary nerves are stronger developed and subparallel to the secondary ones, ascending at an angle of 50°—65°, straight or slightly curved, irregularly archingly joined, sometimes very minutely joined only or diminishing until inconspicuous near margin, prominent on either side, tertiary nervation laxly reticulate but often one nerve more distinctly developed between two secondary ones and parallel or subparallel to the latter, prominulous on either side, sometimes near margins a few transverse and sinuous; petioles 0.3—1(—2.7) cm long, flat above, in juvenile leaves sparsely whitish or reddish ferruginously sericeous or woolly, glabrescent. *Flowers* white, ⚥ and ♀, solitary or in few- to many-flowered clusters, the ♀ flowers larger than the ⚥ flowers and with more exsert corolla; pedicels slender, 3—10 mm long, whitish or reddish ferruginously sericeous or woolly. *Sepals* ovate, 3—4 by 1.5—2.5 mm in ♀ flowers, 2—3 by 1—1.5 mm in ⚥ flowers, apex rounded or obtuse or subacute, yellowish or reddish ferruginously sericeous or woolly without, glabrous within, margin membranous, fimbriate, apex sometimes with an indistinct bundle of darker hairs. *Corolla* 2—3.5 mm, in the ♀ flowers longer than in the ⚥ flowers, lobes ovate-oblong, 1—1.5 by c. 1 mm, apex truncate. *Stamens* c. 1.5 mm long, inserted in the middle, filaments subulate, curved downwards, at the tip curved upwards upwards and bearing the anther, the latter ovoid, c. 1 mm long, apex mucronulate, dehiscing laterally. *Staminodes* lanceolate or oblong, 1—1.5 mm long, apex obtuse. *Ovary* globose-conoid, c. 1 by 1 mm, 5-lobed, yellowish or ferruginously hirsute at base; style stout, cylindrical, 1.5—3.5 mm, 5-ribbed, with 5 stigmas at the top. *Fruits* pink, red or green, obovoid or ovoid or globose, sometimes oblique, 0.8—2.7 by 0.5—2 cm, 1—5-seeded, with a short remnant of the style which is often sunk into the top of the fruit, with a ring of ferruginous hairs around base of style, glabrescent there, glabrous or sparsely ferruginously or whitish sericeous and ultimately glabrous, in all cases with a ring of ferruginous hairs at base of fruit, pericarp fleshy or subligneous, thin or rather thick; seeds obovoid or pyriform, laterally compressed, 0.7—1.5 by 0.4—0.6 by 0.2—0.5 cm, subacute at either end, brown, nitidous, scar linear, 0.5—1.5 mm wide, as long as seed or slightly shorter, yellowish white, albumen copious, cotyledons foliaceous, radicle relatively stout, c. 1 mm long, obtuse at tip.

Type specimen: *Teysmann 1899* in BO.

Distr.: Malay Peninsula, Lingga Islands, Sumatra, Banka, Java, Borneo, Philippines (Sibuyan, Mindanao, Luzon, Palawan, Samar), Celebes, Muna, Flores, Amboina, Talaud Islands, Gebe, Obi, Key Islands, New Guinea, Solomons (Ysabel), New Hebrides (Aneityum), Australia, New Caledonia and some surrounding islets, Fiji, Tonga, Samoa, Niue.

Remarks: When studying the type specimen of *Sideroxylon oxyedrum* Miquel (*Teysmann 3572* in BO) it is evident that what is generally known as *Planchonella oxyedra* does not match the type specimen, and in fact it seems that *Sideroxylon oxyedrum* does represent a quite different species and it might well be doubted, the material being sterile, whether it is a *Planchonella* at all. The main difference is the tertiary nervation which shows a fair number of transverse nerves, a number never found in '*Planchonella oxyedra*'. Also the secondary nerves are curved, those of '*P. oxyedra*' being straigha. Therefore the use of the name *P. oxyedra* seems not to be justified. The next validly published name is *P. linggensis* (Burck) Pierre based on *Sideroxylon linggense* Burck (type specimen: *Teysmann 1899* in BO, dupl. in L). This specimen exactly matches the specimens which are until now inserted in *P. oxyedra* and therefore the name *P. linggensis* is used here.

Var. **linggensis.**

Secondary nerves 10—35. Juvenile *leaves* greyish or whitish puberulous below. Petiole whitish or yellowish sericeous or puberulous. Pedicels and sepals whitish or yellowish sericeous or puberulous at the outside. *Fruits* 0.8—2.5 by 0.5—1.9 cm, 1—4-seeded.

Type specimen: *Teysmann 1899* in BO.

Vern. names: *Malay Peninsula,* medang kung lawang, geliti, membatu, tuak; *Sumatra,* mensai, kaju malau, njatu sudu-sudu; *Banka,* bernassi, bernasik; *Java,* towu landuk, djēnggot; *Tagbanua,* empaparei; *Panay,* loter; *Bisaya,* loter; *Bohol,* pauan kolauan; *Celebes,* nakimpaseana, molitilaii, kaju ruchi, lemolemo, pae-pae, bolu bolu; *Muna,* sampie; *Flores,* éndopo; *Amboina,* si loa; *Obi,* motoa; *Morotai,* moleomagetipi; *New Guinea,* hajanggoewee (Manikion dialect); *New Hebrides,* inretchar; *Samoa,* alaa.

Use: On Celebes the timber is used for house-building, and is much sought after for hatchet-handles and hunting spears.

Distr.: Malay Peninsula, Lingga Islands, Sumatra, Banka, Java, Borneo, Philippines, Celebes, Muna, Flores, Ambon, Talaud Islands, Gebe, Ceram, Kai Islands, New Guinea, Biak, Japen, Solomons, New Hebrides, Australia, New Caledonia, Fiji, Niue.

Malay Peninsula. Johore, Pulau Tinggi: *Sweklie 878* (SING), fr. green going bronze, June; ibidem, in bush on the shore: *Burkill 876* (K), fl. June — Pahang, Pulau Chibeh, sealevel: *Corner s.n.* (SING); Pulau Duchong, sealevel: *Corner s.n.* (SING); Pulau Tulai, sealevel: *Henderson 18512* (SING), shrub, fr. green, March; Telok Sesih, Kuantan Pahang: *Yeop CF 878* (SING), fr. March; Kuantan: *Bidin CF* 4176 (SING), fl. April — Penang, Penang Isl., Batu Terengi, coast: *Curtis 1072* (K, SING), tree, fr. Oct.; ibidem: *Wallich 7976* (K), fl.; ibidem, Govt. Hill, alt. c. 600 m: *Curtis 3647* (SING), small tree, fl. May — Malacca, Mt Mering, alt. c. 600 m: *Ridley s.n.* (SING), fr. — Singapore, coast near Singapore town: *Kjellberg s.n.* (S), fl. April.

Lingga Isl. Bukit Besar: *Teysmann 1899* (BO, L), fr.

Sumatra. f. Lam, 1925, 214.

Banka. Lobok Besar, Mt Pading, alt. 200 m: *Kostermans 956* (= *Anta 956*) (BO, L, SING), tree 16 m, fl. buds, Sept.; Perlang, alt. c. 60 m, sandy clayey soil, primary forest: *Kostermans 177* (= *NIFS bb 34111*) (BO, L), buds.

Java. Pasir Ipis, SE of Leuwiliang, alt. 500 m: *Bakhuizen v. d. Brink I 7668* (BO, L), Dec.

Borneo. Sarawak, Baram distr., Miri river: *Hose 567* (BM), fl.

Celebes. Bualemo, Bilatto, alt. 200 m: *NIFS bb 19402* (BO, L); Malili, near Usu: *NIFS CEL./II-382* (= *Waturandang 835*) (BO, L), fl. Jan.; ibidem, alt. c. 25 m: *NIFS CEL./II-682* (BO, L), fr. July.

Muna. Pemanua river near Labalano, alt. c. 4 m: *Waturandang 234* (= *NIFS bb 21763*) (BO, L), fl. bud greenish, fr. greenish.

Flores, Talaud Islands. f. Lam 1927, 474.

Amboina, Gebeh, Kai Islands. f. Lam 1925, 215.

Philippines. Samar, Mt Calbiga: *Sulit 6390* (L, SING), fr. April — Sibuyan, prov. Capiz, Magallanes (Mt Giting-giting): *Elmer 12552* (L, PNH), fl. April.

Ceram. Mt Meita, alt. c. 1000 m: *Eyma s.n.* (L), fl. Jan.

New Guinea. Western New Guinea, 18 km SW of Bernhard Camp, Idenburg river, alt. 280 m: *Brass & Versteegh 11993* (A, L), fl. buds green, Febr.; distr. Radjah Ampat, Sorong, Mlasoen Hill, alt. 65 m in primary forest: *van Royen 3396* (L), tree 7 m, fr. April; distr. Manokwari, Manokwari, Oransbari, primary forest: *v. d. Star 1* (L), tree 33 m — Northeastern New Guinea, Sepik region: *Ledermann 9845* (K), fl. — Southeastern New Guinea, Buna Hinterland, c. 15 km N of Embi lakes, in rainforest, alt. c. 16 m: *L. S. Smith NGF 1259* (BRI), fr. apple-shaped, some pink, some red, March; Dobodura distr., rainforest: *Cavanaugh 2092* (L, LAE), fr. April.

Biak. without known loc.: *NIFS bb 30842* (BO, L, SING).

Japen. Wamiami near Seroei: *Aet & Idjan 283* (BO, L), fl. Aug.; Sumberbabu near Seroei: *Aet & Idjan 834* (BO, L), fr. green, Sept.

Australia. Tweed river: *von Mueller s.n.* (NSW), fl.

Solomons. Ysabel, Tiratona, mountain forest, alt. 600 m: *Brass 3312* (A, L), fl. Dec.

New Hebrides. f. Lam, Blumea 5, 1, 1942, 13.

New Caledonia. Tiebaghi plateau, dense bush: *Däniker 1396* (Z), shrub, fl. March; Néhoué plain, along Néhoué river: *Däniker 3091* (Z), fl. April; Tchiaor, in Diahot river valley: *Balansa 3153* (P), fl. & fr.

Neba Island, in cocos plantation: *Däniker 1593* (Z), fl.

Lifu. in forests: *Balansa 1828* (P), fl. & fr.

Fiji. Viti Levu, Nadronga & Navosa, southern slope of Nansoi Highlands, in drainage of Nemosi Creek above Tumbenasolo, alt. 300—450 m, dry hillside thickets: *A. C. Smith 4609* (A), fr. May — Ovalau, hills W of Lavoni Valley, on ridge S of Mt Korolevu, alt. 400—500 m, dense forest: *A. C. Smith 7546* (L, US), tree 12 m, fr. May; ibidem: *A. C. Smith 7649* (L, US), tree 12 m, fr. May.

SAMOA. Savaii, Falealupo, alt. c. 25 m, edge of forest, plantation: *Christophersen 2775* (K), tree 5 m, Sept.; Salailua-Lataitai, alt. c. 10 m: *Christophersen 2652* (K), fr. olive-green, Sept.

NIUE. east of Alofi, alt. 65 m, in thicket: *Yuncker 10096* (K), small tree 4 m, Febr.

Remarks: *A. C. Smith 4609* has provisionally been inserted here but does not match the other specimens in all details. However, there being too little material at hand it has been decided to insert this specimen in *P. linggensis.*

P. littoralis (*Type specimen: Burkill 876 in SING*) and *Chrysophyllum curtisii* (*Type specimen: Curtis 1072 in K*) are inserted here as no differences can be found between these species and *P. linggensis.*

Var. **garberi** (Christophersen) van Royen, nos. stat. — *Planchonella garberi* Christophersen, Bernice P. Bish. Mus. Bull. 128, 1935, 170, f. 25 — *Pouteria garberi* (Christophersen) Baehni, 1942, 296 — *Planchonella oxyedra* (Miquel) Dubard, *p.p.*; Lam, Blumea 5, 1, 1942, 13.

Secondary nerves 7—13. Juvenile *leaves* greyish or whitish puberulous below. Petiole, pedicel and outer surface of sepals whitish or yellowish sericeous or puberulous. *Fruits* 2—2.7 by 1.5—2 cm, 5-seeded.

Type specimen: *Garber 1101* in BISH.

Vern. name: thalavie, sarosaro (Fiji).

Use: The wood is used for building purposes.

Distr.: Samoa (Ofu), Fiji (Vanua Levu) and Tonga (Vavua).

SAMOA. Ofu, alt. 75 m: *Garber 1101* (BISH), fr. July.

FIJI. Vanua Levu, Mbua, upper Ndama river valley, alt. 100—300 m, dense forest: *A. C. Smith 1604* (K, L, S), tree 8 m — Viti Levu, Serua, hills north of Ngaloa, in drainage of Wainiggere Creek, alt. 30—150 m, dense forest: *A. C. Smith 9419* (L, US), tree to 25 m, fl. Nov.; ibidem, hills between Wainiggere and Waisese Creeks, between Ngaloa and Wainiyambia, alt. 50—100 m, dry forest, *A. C. Smith 9635* (L, US), tree 15 m, fl. Nov.

TONGA. Vavua: *Crosby 101* (K), March; ibidem: *Crosby 295* (K), fr. Jan.

Remarks: Though in other cases the fruit has been used to separate two species, the differences here seem to be restricted to the sizes only, which moreover come rather close to each other, and therefore *Planchonella garberi* is reduced to varietal rank.

Var. **vinicolorata** van Royen, nov. var. — *Pag. 432.*

Secondary nerves 8—12. Juvenile *leaves* reddish ferruginously woolly below. Petioles, pedicels and outer surface of the sepals reddish ferruginously woolly. *Fruits* 1—2.5 by 1 cm, 1—3-seeded.

Type specimen: *Kostermans 2242* in L.

Distr.: New Guinea.

NEW GUINEA. Western New Guinea, distr. Manokwari, Arfak Mts, Angi Gita Lake, alt. 1800 m: *Kostermans 2242 & 2242 A* (BO, L, SING), tree 6—7 m, fl. rusty, fr. green.

Remarks: In this variety the same detail — a different pubescence than is usually found — is observable as in *P. pohlmaniana var. vestita, P. cotinifolia var. pubescens* and *P. baueri var. brevipedicellata.* This is one of the problems in this genus as the pubescent varieties are found on the same habitats as the type variety and thus this detail can not be explained by ecological factors. A detailed study in the field might elucidate this problem; though minor in itself it is of some importance for taxonomical reasons owing to the doubt as to whether these pubescent leaves provide a constant detail.

79. **P. aneityensis** (Guillaumin) H. J. Lam, nov. comb. — *Sideroxylon aneityense* Guillaumin, J. Arn. Arb. 13, 1932, 13 — *Planchonella oxyedra* (Miq.) Dubard, Lam, Blumea 5, 1, 1942, 13, *p.p.* — *Pouteria oxyedra* (Miq.) Baehni, 1942, 315, *p.p.* — *Fig. 41.*

Trees, 15—20 m. Branchlets terete or compressed, 1—2 mm in diam., sparsely reddish pilose, glabrescent. *Leaves* scattered, lanceolate or elliptic, (5—)8—12 by (1—)1.5—3.5 cm, apex obtuse or obtusely acuminate, acumen 0.5—5 mm long, base narrowly cuneate, decurrent; with a brownish or reddish intramarginal nerve; chartaceous or coriaceous, glabrous on either side, nitidous above, nitidulous below; midrib prominulous above, sometimes shallowly grooved, prominent below, secondary nerves 6—12 (—16), straight but slightly curved at their tips, ascending at an angle of 60°—70°, archingly joined, prominent on either side, tertiary nervation laxly reticulate, sometimes one nerve more distinctly developed and subparallel to the secondary nerves, thus enlarging the number of the latter up to 16, prominulous on either side; petioles 8—22 mm long, flat above, sometimes shallow and narrowly grooved, rounded below, glabrous or sparsely whitish puberulous and glabrescent. *Flowers* in many-flowered clusters, greeny white, sweetly scented; pedicels filiform, (5—)10—15 mm long, apex slightly thickened, sparsely whitish or reddish pilose. *Sepals* ovate or orbicular, 1—1.5 by 1—1.5 mm, apex obtuse or retuse, whitish or yellowish puberulous without, margin ciliate. *Corolla* 2—2.5 mm long, lobes triangular-ovate, 1—1.5 by 1—1.5 mm, apex obtuse. *Stamens* 1—1.5 mm long, inserted in the basal third or fourth, filaments subulate, c. 1 mm long, angular, anthers ovoid, c. 0.5 mm long, obtuse at apex, dehiscing laterally. *Staminodes* 0.5—0.8 mm long, lanceolate with a subulate acumen, or subulate or filiform. *Ovary* broadly obconoid, c. 0.5 by 1.2 mm, 10-lobed, ferruginously hispidous; style cylindrical, stout, c. 0.5 mm long, 5-ribbed, glabrous. Immature *fruits* ovoid, 5—8 by 4—6 mm, black, glabrous except for a ring of ferruginous hairs at the base, with a 2—3 mm long remnant of the style, pericarp rather solid, fleshy, seeds unknown. Pedicels of fruit 10—15 mm long, sepals up to 3 by 3 mm.

Type specimen: *Kajewski 771* in A.

Distr.: New Hebrides (Aneityum).

NEW HEBRIDES. Aneityum, Anelgauhat Bay, alt. 100 m, rainforest: *Kajewski 771* (A, K, S, SING), fl. Febr.; ibidem: *Kajewski 941* (K, SING, fr. March; ibidem: *Kajewski 945* (K, S, SING), fr. March.

Remarks: Lam and Baehni in 1942 included this species in the widespread and highly variable *P. oxyedra* (= *P. linggensis*) but though the species are closely allied there are some details that keep the two apart. In the leaves the number of secondary nerves is less than in *P. linggensis* viz 6—12 against 8—25, the angle between the secondary nerves and the midrib is slightly larger, viz. 60°—70° against 50°—65°, the midrib is never narrowly crested as in the case in *P. linggensis*, the petiole is narrowly canaliculate or flat in *P. linggensis* and here broadly canaliculate. Moreover the petiole is relatively longer than in *P. linggensis*. The tertiary

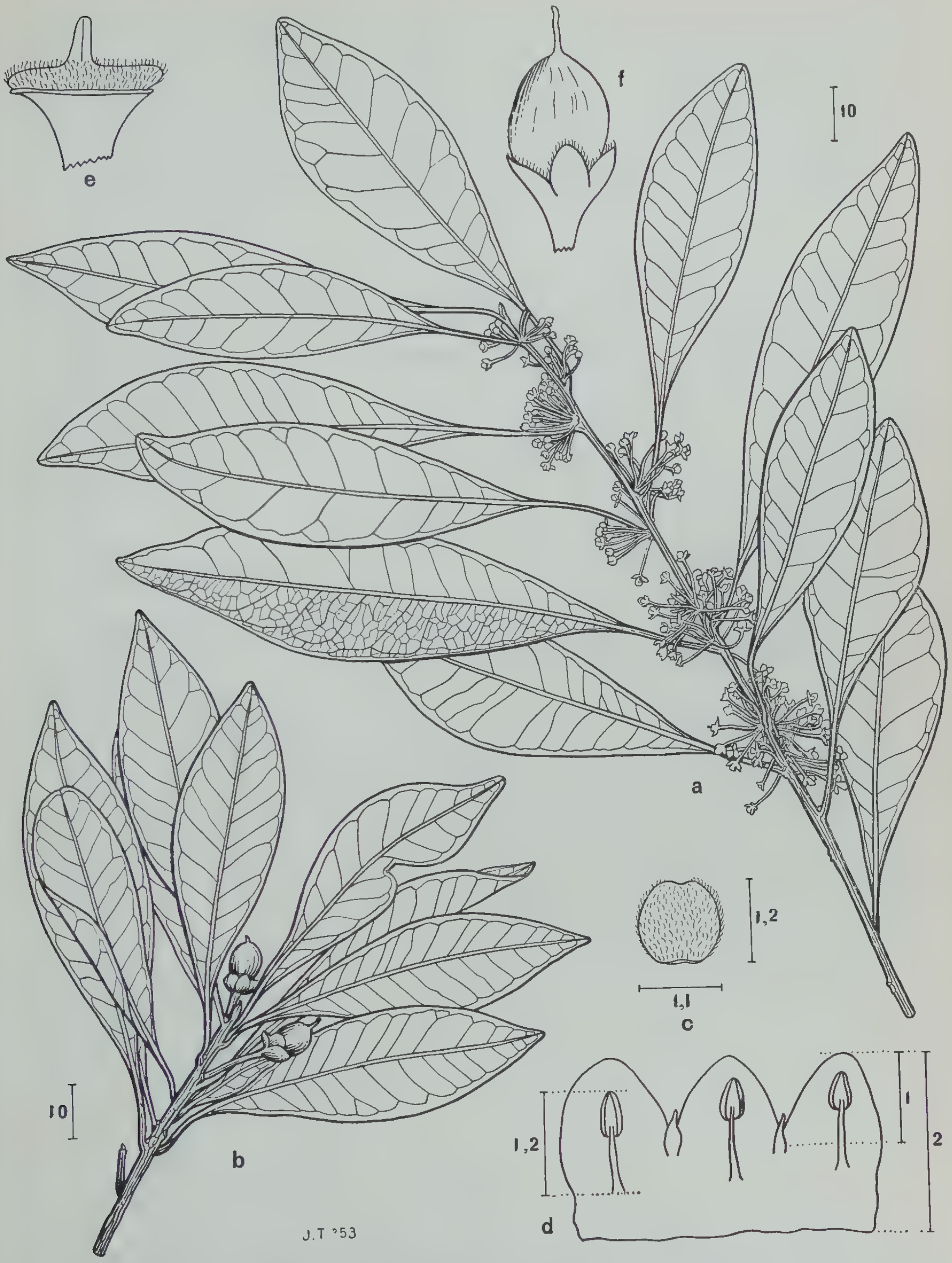


Fig. 41. *P. ancityensis*, a. flowering branch, b. fruiting branch, c. outer sepal, outside, d. part of corolla, inside, e. gynaecium, f. fruit. (b. and f. from *Kajewski 941*, the rest from *Kajewski 771*).

nervation in *P. aneityensis* is prominent on either side and one of the nerves between each pair of secondary nerves is as distinct as the latter and subparallel to them. In *P. linggensis* the tertiary nervation is prominent above and prominulous below while two or more tertiary nerves between each pair of secondary nerves are as distinct as these. They are parallel to subparallel to the secondary nerves, thus enlarging the number of secondary nerves considerably. The pedicel of the fruits in *P. aneityensis* are (0.5—)1—1.5 cm and of *P. linggensis* 0.3—1 cm long.

80. P. obovoidea H. J. Lam, 1925, 207, f. 56; Lam, 1927, 472 — *Pouteria ? obovoidea* (H. J. Lam) Baehni, 1942, 412.

Trees, up to 35 m. Branchlets terete or compressed, 2—5 mm in diam., ferruginously puberulous-sericeous, glabrescent. *Leaves* scattered, ovate, elliptic, or obovate, 8—20 by 3—8.3 cm, apex rounded, obtuse, acute, or obtusely or acutely acuminate, acumen 3—10 mm long, base cuneate, shortly decurrent; margin undulate, involute when dry; with a narrow intramarginal nerve; chartaceous, nitidous above and glabrous but whitish puberulous along midrib, below silvery, greyish, yellowish or ferruginously puberulous or sericeous; midrib minutely crested above, prominent below, secondary nerves 4—12, ascending at an angle of 50°—70°, curved, archingly joined, prominulous above, prominent below, tertiary nervation laxly reticulate, a few nerves subtransverse mainly near the margin but sometimes also near the midrib and the latter often recurved; petioles 1—2.5 cm long, flat above, silvery, greyish, yellowish or ferruginously sericeous or puberulous, glabrescent above. *Flowers* white, cream or light yellow, in few-flowered clusters; pedicels angular, 2—6 mm long, ferruginously puberulous or sericeous. *Sepals* broadly ovate or orbicular, 2—2.5 by 2—3 mm, apex obtuse or rounded, ferruginously puberulous without, glabrous within, inner three sepals with membranous marginal part and fimbriate along margin. *Corolla* 2—3 mm long, lobes ovate or oblong, 1—2 by 0.5—1 mm, apex obtuse. *Stamens* 2—2.5 mm long, inserted in the basal half, filaments subulate, 1—1.5 mm long, anthers ellipsoid, compressed, ovoid or cordate, c. 1 mm long, apex obtuse, dehiscing laterally. *Staminodes* lanceolate, 0.5—1 mm, apex obtuse. *Ovary* obcuneiform, c. 0.5 by 1 mm, 10-lobed, ferruginously hirsute; style stout, cylindrical, 0.5—1 mm long, apex 5-lobed. *Fruits* red or almost black, obovoid, 1.8—3 by 1—1.5 cm, one-seeded, with a distinctly broadened, glabrous or reticulate-scabrous stigma, which is at its base c. 5 mm in diam., brownish, nitidous, glabrous, pericarp ligneous; seeds obovoid, 1.5—2.5 by 0.8—1.2 cm, subobtuse at either end, brown or black, nitidous, scar as long as seed, 3—5 mm wide, brownish white, dull, albumen copious, cotyledons foliaceous, radicle cylindrical, 1.5—2.5 mm long, obtuse at apex, exsert.

Type specimen: *Jaheri 134* in BO.

Vern. names: *Aru*, mat; *Tanimbar*, tefije; *Morotai*, laro, litoko; *Timor*, baineob, waineo, kulinasi, kurnuru, kornura; *New Guinea*, aumaké, suoro, rabole, nadi, alekim; *Ysabel*, seseli; *New Britain*, alekim.

Distr.: Riouw, Java, Celebes, Butan, Timor, Tanimbar, Wetar, Aru, Kai, Morotai, New Guinea, New Britain, Ysabel, Guadalcanal, Australia, Fiji.

RIOUW. Pulau Kedongdong: *NIFS bb 24820* (BO, L).

JAVA. without known loc.: *Teysmann s.n.* (BO, L), fr.

CELEBES. Kendarim Wia Wia: *NIFS bb 31285* (BO, L, SING).

BUTAN. Lipumangan, forests, alt. c. 300 m: *Elbert 6508* (L), fl. Aug.; ibidem: *Elbert 6509* (L); ibidem, on coral-chalk: *Elbert 2747* (L), fl. Aug.; ibidem: on coral-chalk and laterite: *Elbert 6510* (L), fl. Aug.

TIMOR. Nasimetan near Kupang, alt. c. 900 m, in rain forest: *NIFS bb 27109* (BO, L), fr. March.

TANIMBAR ISLANDS. Otimmer, without known loc., alt. c. 30 m: *NIFS bb 24365* (BO, L, SING), fr. March — Jamdena, without known loc., sec. and prim. forest: *Buwalda 4443* (BO, L), fr. March; ibidem: *Buwalda 4488* (BO, L), fr. March.

WETAR. Kali M. Ler-ai, N of Ilwaki, alt. 700 m: *NIFS bb 27209* (BO, L).

KAI. without known loc.: *Jaheri 134* (BO, L), fl.

ARU ISLANDS. Papahula, without loc.: *Jensen 270* (BO, L), fl. green, April.

MOROTAI. Tobelo, clayey soil, flat country, sec. forest: *Kostermans 87* (= *NIFS bb 33781*) (BO, L, SING), tree 30 m, buttressed; ibidem: N-Tjao Exp. region, alt. c. 60 m: *Kostermans 133* (= *NIFS bb 33824*) (BO, L, SING), buds brown, May; ibidem, clayey soil, flat country, alt. c. 40 m, primary forest: *Kostermans 260* (= *NIFS bb 33930*) (BO, L), fl. light yellow, sepals rusty brown, July.

NEW GUINEA. Western New Guinea, Pioneer Camp, Mamberamo river, alt. c. 35 m: *NIFS bb 31083* (BO, L); Mimika, Irikuria, Uta, alt. 5 m: *Lundquist 235* (= *NIFS bb 32954*) (BO, L), fr. red, July; Buru, near Uta, alt. c. 5 m: *L. S. Smith NGF 1240* (BRI), fr. red, Jan.; ibidem, alt. 5 m: *Aet 572* (BO, PNH), big tree, fr. red — Northeastern New Guinea, Morobe distr., Quembung, alt. 800 m, forest: *Clemens 1125* (A, B, L), fr. red or almost black, Dec.; Wau area, Bulowat East, alt. c. 1100 m: *NGF 2527* (BRI, L); Sepik regions: *Ledermann 9515* (L), fl. — Southeastern New Guinea, Fly river, c. 50 km below Everill Junction: *Brass 6584* (L), tree c. 20 m, fr. red, common in fringing rainforest along river; Fly river: *d'Albertis s.n.* (FI), fl. & fr.; Romilly Sawmill logging area: *Hart 5033* (LAE), fl. March; strip line c. 1 mile from site of Brown river bridge, in primary forest: *Jackson & McDonald s.n.* (L, LAE), fl. Nov.; Mt Obree to Laruni Spur, alt. c. 2000—2500 m: *Lane-Poole 386* (BRI); Lala river, alt. c. 1600 m, forest: *Carr 16012* (SING), tree c. 16 m, fl. buds, March; Lala valley, alt. c. 2000 m: *Carr 15262* (SING), tree c. 27 m, fl. cream, Febr.; ibidem: *Carr 15862* (SING), fl. cream, Febr.; Isuarava, alt. c. 1200 m, sec. forest: *Carr 15924* (SING), fl. white, March.

NEW BRITAIN. Jacquinot Bay, clayey soil, rain forest: *Mair NGF 1859* (BRI, L, LAE), fr. obovoid, one-seeded; Pandi river, Open Bay, rain forest on deep volcanic soil; *Mair NGF 1887* (BRI, L, LAE), tree 30 m, fr. deep red-brown, May.

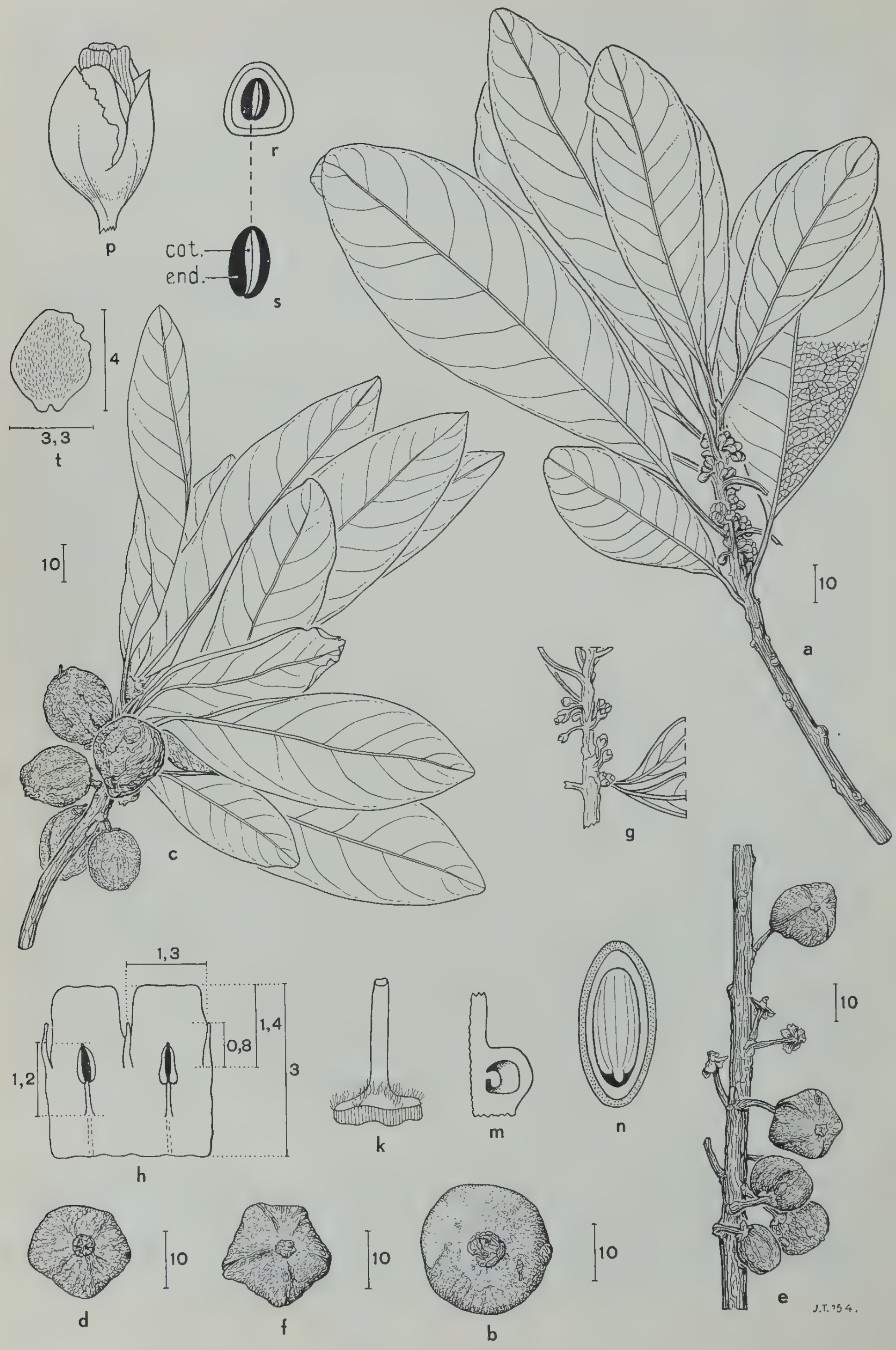
YSABEL. Tiratona, alt. 600 m, mountain forest: *Brass 3312* (A, L), fl. Dec.; ibidem: *Brass 3338* (BRI), fl. & fr. greenish, Dec.

GUADALCANAL. Mt Austen, alt. c. 250 m, in rain forest: *Walker & White BSIP 66* (BRI), tree c. 30 m, fr. Aug.; Matepone river, lowland rain forest: *Walker BSIP 13* (BRI), tree c. 40 m, July.

AUSTRALIA. Queensland, Cardwell: *White 21* (NSW), fr. Sept.; Rockingham Bay: *von Mueller s.n.* (NSW), fr.; North Kennedy distr., Palm Isl.: *Bancroft s.n.* (BRI), fr.; South Kennedy distr., range W from Koumala (S of Mackay): *Francis s.n.* (BRI); Eungella Range: *Francis s.n.* (BRI), fr. Oct.; Cook distr., Daintree river, alt. 10 m: *Kajewski 1433* (BRI), tree up to 25 m, fl. Febr.; Camerunga: *Cowley 99a* (BRI), tree c. 16 m, fr.; East Innisfail: *Archer s.n.* (BRI), fr. April; Stewart Creek, near Daintree: *L. S. Smith & Webb 4038* (BRI), tree c. 15 m, fr. Sept.; Fenby's Gap, c. 5 km WSW of Clump Point, alt. c. 60 m, in rain forest: *L. S. Smith & Webb 4791* (BRI, L), tree c. 11 m, fl. buds, Oct.; Port Curtis distr.: Byfield: *Simmonds 4* (BRI), fr.

FIJI. Viti Levu, Nandronga & Navosa, southern slope of Nansori Highlands, in drainage of Namosi Creek above Tumbenasolo, alt. 300—450, dry hillside thickets: *A. C. Smith 4609* (A), fr. May.

81. P. pohlmaniana (F. v. M.) Pierre ex Dubard, Ann. Mus. col. Mars., sér. 2, 10, 1912, 47; Burkill, Kew Bull. 1935, 319 — *Achras pohlmaniana* F. v. M., Fragm. 5, 1866, 184 — *Pouteria pohlmaniana* (F. v. M.) Baehni, 1942, 334 — *Sersalisia pohlmaniana* (F. v. M.) Domin, Bibl. Bot. 89, 1928, 1060, f. 174 — *Sideroxylon dugulla* Bailey, Qld Agric. Journ. 1, 1, 1897,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3 — *Pouteria ? dugulla* (Bailey) Baehni, 1942, 407 — *Sersalisia dugulla* (Bailey) Domin, l. c., 1063 — *Fig. 42.*

Shrubs or trees, up to 25 m. Branchlets angular, 1.5—4 mm in diam., sometimes slightly winged, brownish, blackish, yellowish of greyish velutinous or puberulous when young, sometimes partly or completely glabrous. *Leaves* conferted at tips of branchlets or scattered, narrowly oblong-obovate, obovate-lanceolate or obovate, 7—20 by 1.5—6 cm, apex rounded, obtuse or obtusely acuminate, base attenuate, decurrent; with a narrow intramarginal nerve; chartaceous, glabrous or densely yellowish puberulous on either side, nitidous above, dull below; midrib flat above and prominulous, prominent below, secondary nerves 6—11, ascending at an angle of 30°—85°, curved or straight, archingly joined by thickened tertiary nerves, prominent on either side, tertiary nervation reticulate with a few sinuous or irregular transverse nerves which recurve near midrib, prominulous on either side, sometimes one nerve between each pair of secondary nerves more distinctly developed and parallel or subparallel to the latter; petioles 0.5—2.5 cm long, flat above, glabrous, blackish, brownish, yellowish or yellowish brown tomentose, sericeous or woolly, sometimes partly glabrescent. *Flowers* clustered, 5- or 6-merous; pedicels angular, 2—4 mm long, yellowish tomentose. *Sepals* ovate, 3.5—4 by 3—3.3 mm, yellowish sericeous or pubescent without, glabrous within. *Corolla* 3—4.5 mm long, lobes oblong, 1.5—2 by 1.5—2 mm, apex truncate. *Stamens* 1—1.5 mm long, inserted in the basal fourth, filaments subulate, c. 0.5 mm long, anthers ovoid, c. 1 mm long, apex obtuse, mucronulate, dehiscing extrorsely or lateral. *Staminodes* oblong or linear, c. 1 mm long, apex obtuse or acute. *Ovary* conoid, c. 1 by 2.5 mm, brownish yellow hirsute; style stout, 5-sided, 2—3 mm long. *Fruits* green, ovoid, globose, ellipsoid, or star-shaped in transverse section, 1.2—3 cm in diam., or 1.5—3 by 1.2—2 cm, sometimes obscurely or distinctly 5-angular, 5-seeded, with a short remnant of the style which is widened at base, the style sometimes sunk into tip of fruit, pericarp subligneous or fleshy, blackish, brownish or yellowish, glabrous; seeds ellipsoid, compressed, 10—12 by 5—9 by 3—4 mm, obtuse at either end, brown, nitidous, scar linear, slightly shorter than seed, 1—2 mm wide, whitish, dull, albumen copious, cotyledons foliaceous, radicle stout, conoid, 1.5—2 mm long, shortly exsert, obtuse at tip.

Type specimen: *Dallachy s.n.* in MEL.

Distr.: Australia.

Remarks: According to Baehni the albumen is poorly developed, but though this might probably have been the case in Baehni's material, this is certainly not so in the type specimen and in the other specimens mentioned here.

Fig. 42. *P. pohlmaniana*, var. *pohlmaniana*, a. flowering branch, b. fruit from above, g. part of flowering branch enlarged, h. part of corolla, inside, k. gynaecium, m. longitudinal section of gynaecium, n. longitudinal section of seed and embryo, p. flower, r. transverse section of seed, s. transverse section of embryo, t. outer sepal, outside. (b. from *Cunningham 2025*, h. and t. from *Dietrich s.n.*, the rest from *von Mueller 11726*) — Var. *vestita*, c. fruiting branch, d. fruit from above (*L. S. Smith 4312*) — Var. *asterocarpon*, e. fruiting branch, f. fruit from above (*Kemp s.n.*).

This species sometimes closely resembles *P. arnhemica.* The fruits are quite different, however, those of *P. arnhemica* being ovoid, while those of *P. pohlmaniana* are globose or star-shaped.

The three varieties, in this sequence: *asterocarpon, pohlmaniana* and *vestita* show a gradual change in some characters, a change which is so marked in some details that it made the description of these three varieties possible.

In var. *stellatocarpon* the fruit is star-shaped in transverse section and the pericarp is rather ligneous. The ultimate branches are glabrous except at, or slightly below, the tip. The petioles and the leaves are glabrous while the number of the transverse, sinuous, tertiary nerves between two secondary nerves is 8—14. The angle between the secondary nerves and the midrib is 50°—85° and the tip is often short obtusely acuminate. The scar of the seeds on the whole tends to be wider and shorter than in the other varieties.

In var. *pohlmaniana* the fruit is mostly globose but sometimes slightly 5-angled while the pericarp is either subligneous or fleshy. The juvenile branches are pubescent towards their base but glabrescent in the lower parts. The petioles and the lower surface of the midrib are pubescent while the number of transverse nerves between two secondary nerves is 7—9, the angle between the secondary nerves and the midrib is 30°—60° (—85°), and the leaf-apex is mostly rounded and rarely indistinctly obtusely acuminate. The scar is narrow (1—1.5 mm wide) and almost as long as the seed.

In var. *vestita* the fruit is globose and rarely 5-angled, with a fleshy pericarp. The ultimate branches are always pubescent up to their base. The petioles are woolly pubescent and the juvenile leaves yellowish puberulous on either side, but mature leaves sometimes are glabrous above. The number of transverse tertiary nerves between each pair of secondary nerves is 3—7, or are very indistinctly developed so being almost indistinguishable from the reticulate tertiary nervation. The angle between midrib and secondary nerves is 50°—85° and this corresponds to that in var. *asterocarpon.* The scar is of the same type as in var. *pohlmaniana.*

Var. **pohlmaniana** — *Fig. 42, a—b, g—t.*

Base of style broadened and the style not sunk into the top of the fruit. Pericarp fleshy. *Fruits* globose or star-shaped in transverse section. Branchlets pubescent to their base, but later glabrescent in the lower parts. Petioles pubescent but glabrescent at the top. *Leaves* glabrous.

Type specimen: *Dallachy s.n.* in MEL.

Vern. names: dugulla, sapota, plum, doogulla.

Use: The wood is regarded in Queensland as the best wood for engravings.

Distr.: Australia.

AUSTRALIA. Queensland, Rockhampton: *Dietrich s.n.* (BM), fl.; ibidem: *von Mueller 11726* (BM), fr.; ibidem: *Perrier s.n.* (BRI), juv. fr. Jan.; banks of Brisbane river: *Cunningham 2025* (BM), large shrub; North Kennedy distr., Edgecombe Bay: *Dallachy s.n.* (BRI, MEL, P), small tree, fr. green, fl. June; ibidem, Brava Scrub near Ravenswood; *Dwyer s.n.* (BRI), fr. June; S of Enoggura Creek: *Bailey s.n.* (BRI), fl. Dec.; Maryborough distr.: *Simon s.n.* (BRI), fr. April; Gundiaj, 26 miles N from Gympil: *Kajewski s.n.* (BRI), fl.; Mt Toressa: *Bailey 29* (BRI), tree 22—25 m; Kamerunga, Batton river: *Cowley s.n.* (BM, BRI, K), tree up to 23 m; Burnett distr., Biggenden, light rain forest: *White 7276* (BRI), medium sized tree; Nanango: *Grove 117* (BRI), fr. July; ibidem: *Sutton 218* (BRI); Riboy: *England s.n.* (BRI), July; Middle Percy island: *Tryon s.n.* (BRI), June.

Var. **vestita** (White) van Royen, nov. stat. — *Sideroxylon pohlmaniana* (F. v. M.) Bentham & Hooker, var. *vestita* White[1]) — *Fig. 42, c—e.*

Base of the style broadened and the style not sunk into the tip of fruit. Pericarp fleshy. *Fruits* globose, sometimes slightly 5-sided. Branchlets pubescent to the base. Petioles woolly pubescent. *Leaves* pubescent on either side, but sometimes glabrescent above.

Type specimen: *White 1409* in NSW.

Vern. names: velvet leaf, palata.

Use: The fruit is eaten by cattle and the foliage in times of drought is cut down for fodder.

Distr.: Australia.

AUSTRALIA. Queensland, North Kennedy distr.: 24 miles SW of Ayr, on old silted up drainage channels, alt. c. 16 m: *L. S. Smith 4312* (BRI, L), tree c. 13 m, fr. June; Gilbert river: *White 1409* (BRI, L), fr. Febr.; between Laura and Koolburra station, c. 65 km NW of Laura township: *Logan s.n.* (BRI), July, tree c. 10 m; Endeavour river: *Persich s.n.* (BRI); Cape York Peninsula: *Jacobson s.n.* (BRI); Allera Ch., Townsville: *Young s.n.* (BRI), fr.; Mungabulla, Townsville: *Young s.n.* (BRI); between Jardine river and Cape York: *Whitehouse s.n.* (BRI), fr.; Townsville: *Michael 1610* (BRI), fr.; Walsh river: *Barclay-Millor s.n.* (BRI), May; Burke distr., 'Esmeralda', SE of Croydon, alt. c. 260 m, on barren sandstone ridge: *Blake 19623* (BRI, L), *fr.* green, July; without known loc.: *von Mueller 22* (BRI).

Remarks: In the Brisbane Herbarium there is a specimen from the Botanic Gardens which is slightly pubescent below only and thus approaches var. *pohlmaniana*.

Var. **asterocarpon** van Royen, nov. var. — *Pag. 432 and fig. 42, e—f.*

Base of the style broadened but the style itself sunk into the tip of the fruit. Pericarp thin, ligneous. *Fruits* star-shaped in transverse section. Branchlets glabrous. Petioles glabrous. *Leaves* glabrous.

Type specimen: *Kemp s.n.* in BRI.

Vern. name: moirary.

Distr.: Australia.

AUSTRALIA. Queensland, Atherton distr., without known loc.: *Kemp s.n.* (BRI), fr.; ibidem: *Durry s.n.* (BRI), fr.; ibidem, Gadgarrah: *Fuller 10 G* (BRI); ibidem, without known loc.: *Bailey s.n.* (BRI), May; Imbil: *Wead (?) 467* (BRI), fr.

82. P. guianensis van Royen, nom. nov. — *Achrouteria pomifera* Eyma, Rec. Trav. bot. néerl. 33, 1936, 193, f. 3; idem, Med. Bot. Mus. Herb. Utrecht 27, 1936, 193, f. 3; idem, Flora of Suriname 4, 1, 1936, 384.

Trees, up to 30 m high. Branchlets angular, 1—3 mm in diam., glabrous. *Leaves* scattered, obovate or obovate-oblong, 5—12 by 2.5—7.5 cm, apex obtuse or short obtusely acuminate, acumen 1—3 mm long, rarely emarginate, tapering into petiole; with a narrow intramarginal nerve; dull below; midrib prominulous above, prominent below; secondary nerves 6—10, ascending at an angle of c. 45°, prominent on either side, sometimes stronger below than above, straight, but at the tips curved, archingly joined or diminishing until inconspicuous and connected by some tertiary nerves, the latter transverse, sparse, with a sparse reticulate nervation in between, prominulous above, prominent below; petioles 5—12 mm long, indistinctly grooved or flat above, glabrous. *Flowers* in few-flowered axillary clusters, greenish white or almost white; pedicels terete, 1.5—2.5 mm long, sparsely whitish hairy. *Sepals* broadly ovate or suborbicular, 2—3 by 2—3 mm, sparsely whitish pilose without, glabrous within, margin of the three inner sepals membranous. *Corolla* 2.5—3.5 mm long, lobes broadly rotundate, c. 2 by 1.5 mm. *Stamens* 2—2.5 mm, inserted in the basal fourth or almost at the base of the corolla, filaments subulate, 1.5—2 mm long, anthers ovoid, c. 0.8 mm long, compressed, apex mucronate, dehiscing extrorsely. *Staminodes* subulate, c. 0.8 mm long. *Ovary* ovoid, c. 1.5 by 0.5 mm, 5-sided, whitish pilose; styles solid, c. 2 mm long, 5-ribbed, stigmas 5, papillose. *Fruits* subglobose, 2—5 cm in diam., 5-seeded with at the top a lighter coloured broadened base of the remnant of the style, glabrous, pericarp spongy but solid; seeds ellipsoid-obovoid, 10—15 by 10—12 by 4—7 mm, laterally flattened, nitidous; scar linear, almost as long as the seed, whitish, dull; albumen copious, cotyledons foliaceous, radicle conoid, 2—3 mm long, acute.

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[1]) Neither Mr Blake from the Brisbane Herbarium nor the present author were able to trace the description of this variety. Nomen nudum?

Type specimen: *Davis 1040* in K.

Vern. names: limonaballi, haimara-kushi, parupiballi (British Guiana); batabaly (Suriname).

Distr.: British Guiana, Suriname, Brazil.

BRITISH GUIANA. Cuyuni river, near Tinamon falls, in mixed forest, alt. c. 45 m: *Davis 1040* (K, U), tree c. 30 m, fl. March; Demerara Country, Kuruabaru river near Demerara river: *Hohenkerk 804* (U), fr. Aug.; between Aruka and Aurakura rivers, on hill slopes in mixed forests: *Forest Dep. Brit. Guiana 913* (K, U), tree c. 34 m, fr. April; Essquibo river, Siba creek, Moraballi creek, in Morabukea forest: *Fanshawe 3417* (K, U), fr. April.

SURINAME. Coppename river, near Raleighfalls, virgin forest: *Lanjouw 816* (U), tree 10—12 m, fr. Sept.; Patrick savanne, near Suriname river: *BW 193* (U); Brazil.

BRAZIL. According to Eyma found near Santos and Rio de Janeiro.

Remarks: This species is one of the two American species of *Planchonella*. It undoubtedly belongs to that genus and does not represent a separate genus. As it possesses a 5-merous flower with staminodes and the embryo is provided with thin, leafy cotyledons surrounded by a thick layer of endosperm, it falls within the limitations of the genus *Planchonella* as defined here.

It is closely allied to *P. obovoidea* on account of the transverse nerves connected by the reticulate tertiary nervation. Also the broadened base of the style is a detail found in *P. obovoidea* as well as in *P. pohlmaniana*.

The specific epithet *pomifera* in *Planchonella* has already been used by Dubard (1913, 63) on transferring *Beauvisagea pomifera* Pierre to *Planchonella*. Though this species later appeared to be a *Pouteria*, *P. maclayana* (F. v. M.) Baehni, the combination *Planchonella pomifera* was already made and could not be used on referring *Achrouteria pomifera* to *Planchonella* even after the original *Planchonella pomifera* had been removed to another genus. Therefore the combination *Planchonella guianensis* has been chosen, referring to the fact that this species is found mainly in the Guiana region of South America.

83. P. arnhemica (F. v. M.) van Royen, nov. comb. — *Achras arnhemica* F. v. M. in Bentham, Fl. Austr. 4, 1869, 280 — *Pouteria arnhemica* (F. v. M.) Baehni, 1942, 286 — *Sideroxylon portus-darwinii* Schwarz, Fedde Repert. 24, 1927, 92 — *Sersalisia arnhemica* (F. v. M.) Domin, Bibl. Bot. 89, 1928, 1062 — *Fig. 43.*

Trees, c. 8 m. Branchlets terete, sometimes ribbed, 2—4 mm in diam., greyish, yellowish or slightly ferruginously tomentose. *Leaves* subconferted at tip of branchlets, obovate or subrotundate, 7—18 by 2.6—8 cm, apex rounded or retuse, base broadly cuneate and rather abruptly narrowing into petiole; margin undulate, with a lighter coloured intramarginal nerve; membranous, greyish or yellowish tomentose on either side, glabrescent, except sometimes along lower surface of midrib, when glabrous dull on either side but darker coloured above; midrib prominulous above, sometimes flat and slightly grooved, prominent below, secondary nerves 7—10, ascending at an angle of 55°—65°, straight but slightly curved near margin, diminishing until inconspicuous or archingly joined by some thickened tertiary nerves, prominent on either side, tertiary nervation

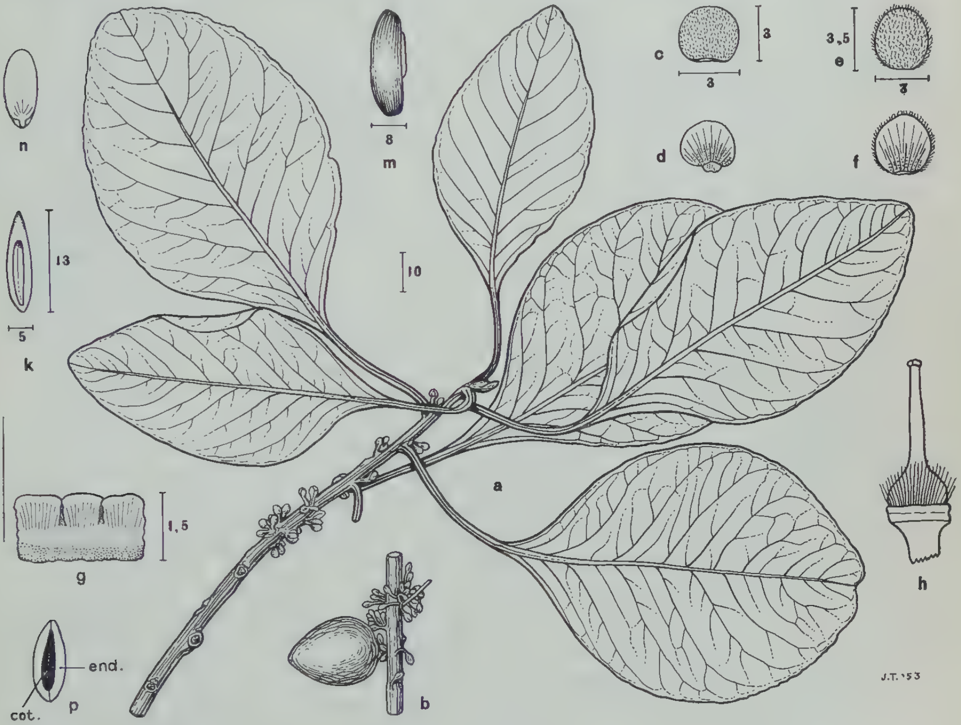

Fig. 43. *P. arnhemica,* a. flowering branch, b. fruiting branch, c. outer sepal, outside, d. outer sepal, inside, e. inner sepal, outside, f. inner sepal, inside, g. part of corolla, inside, h. gynaecium, k. seed, showing the scar, m. seed seen from aside, n. longitudinal section of embryo, p. transverse section of embryo. (*Allen 712*).

reticulate with a few nerves sinuously transverse and recurving near midrib, prominulous on either side, sometimes one nerve between two secondary nerves more distinct, parallel to the secondary nerves; petioles 2—5 cm long, flat above, greyish or yellowish tomentose. *Flowers* clustered, ♀ or ⚥, 5- or 6-merous, seen in bud only; pedicels terete, 2—6 mm long, densely yellowish villous or tomentose, but in fruit glabrous. *Sepals* orbicular, 2—3 mm in diam., margin ciliate, yellowish villous or tomentose without, glabrous within. *Corolla* 1.5—2.5 mm long, lobes oblong, c. 0.8 by 0.5 mm, apex truncate. *Stamens* c. 0.8 mm long, inserted in the basal third, filaments subulate, c. 0.5 mm long, anthers ovoid, c. 0.2 mm long, apex obtuse, mucronate, dehiscing laterally. *Staminodes* linear or lanceolate, c. 0.5 mm long, apex obtuse. *Ovary* obconoid, c. 0.5 by 1 mm, apex truncate, ferruginously hispidulous; style cylindrical-conoid, 1—1.5 mm long, 5- or 6-sided. *Fruits* ovoid-globose, 2—3 by 1.8—2.7 cm, at the top with a remnant of the style, which is thickened at its base, 4- or 5-seeded, pericarp fleshy or ligneous, densely brownish tomentose or glabrous; seeds compressed ellipsoid, c. 1.3 by 0.8 by 0.4 cm, apex short obtusely acuminate, base obtuse, brown, nitidous, scar nearly as long as seed, c. 2 mm wide, whitish, albumen copious, cotyledons, foliaceous, radicle cylindrical, c. 1 mm long, obtuse.

Type specimen: *von Mueller s.n.* in MEL.

Vern. name: nutwood.

Distr.: Australia.

AUSTRALIA. Western Australia, near Mt Agnes, Kimberley river: *Gardner 1430* (NSW), fr. June; Prince Regent's river: *Bradshaw & Allen s.n.* (NSW), fr. — Northern Territory, Port Darwin: *Bleeser 297* (B), fr.; ibidem: *Schultz 483* (K), fl. March; Arnhem Land, sea range, *von Mueller s.n.* (BRI, K, MEL), fl.; ibidem: *Thomson 45* (BRI), fr.; Batchelor Farm: *Allen 712* (L, NSW), tree 8 m, fl. & fr.; North Coast: *Brown 5491* (K), juv. fr.; Rum Jungle, on flat near watercourse: *Bateman 2* (BRI), fr. July; ibidem, on drier spot: *Bateman 3* (BRI), fr. July.

Remarks: This species is, though closely related to *P. pohlmaniana,* separated from the latter by the longly narrowed base of the leaf which tapers into the petiole, thus giving the impression of a winged upper part of the latter. It is a distinct feature separating *P. arnhemica* from the other Australian species. In a slight degree this detail is found also in *P. pohlmaniana,* but the base of the leaf is not so markedly abruptly attenuate as in *P. arnhemica.* Also the leaves of *P. arnhemica* tend to be broader than in *P. pohlmaniana.*

84. **P. lamii** van Royen, nov. sp. — *Pag. 432 and fig. 44.*

Trees, up to 16 m. Branchlets terete or angular, 2—4 mm in diam., minutely brownish tomentose, glabrescent. *Leaves* scattered, obovate, 4.2—10 by 2.5—5.3 cm, apex rotundate, broadly obtuse or slightly bluntly acuminate, acumen up to 5 mm long, base cuneate, more or less abruptly or gradually narrowed into petiole; margin undulate, with a narrow intramarginal nerve; rigidly chartaceous, ferruginously or greyish tomentose on either side, glabrescent; midrib prominulous above, prominent below, secondary nerves 5—7, ascending at an angle of 60°—70°, curved towards margin, archingly joined, or diminishing until inconspicuous and joined by some thickened tertiary nerves only, prominent on either side, tertiary nervation reticulate, near midrib parallel or perpendicular to secondary nerves, near

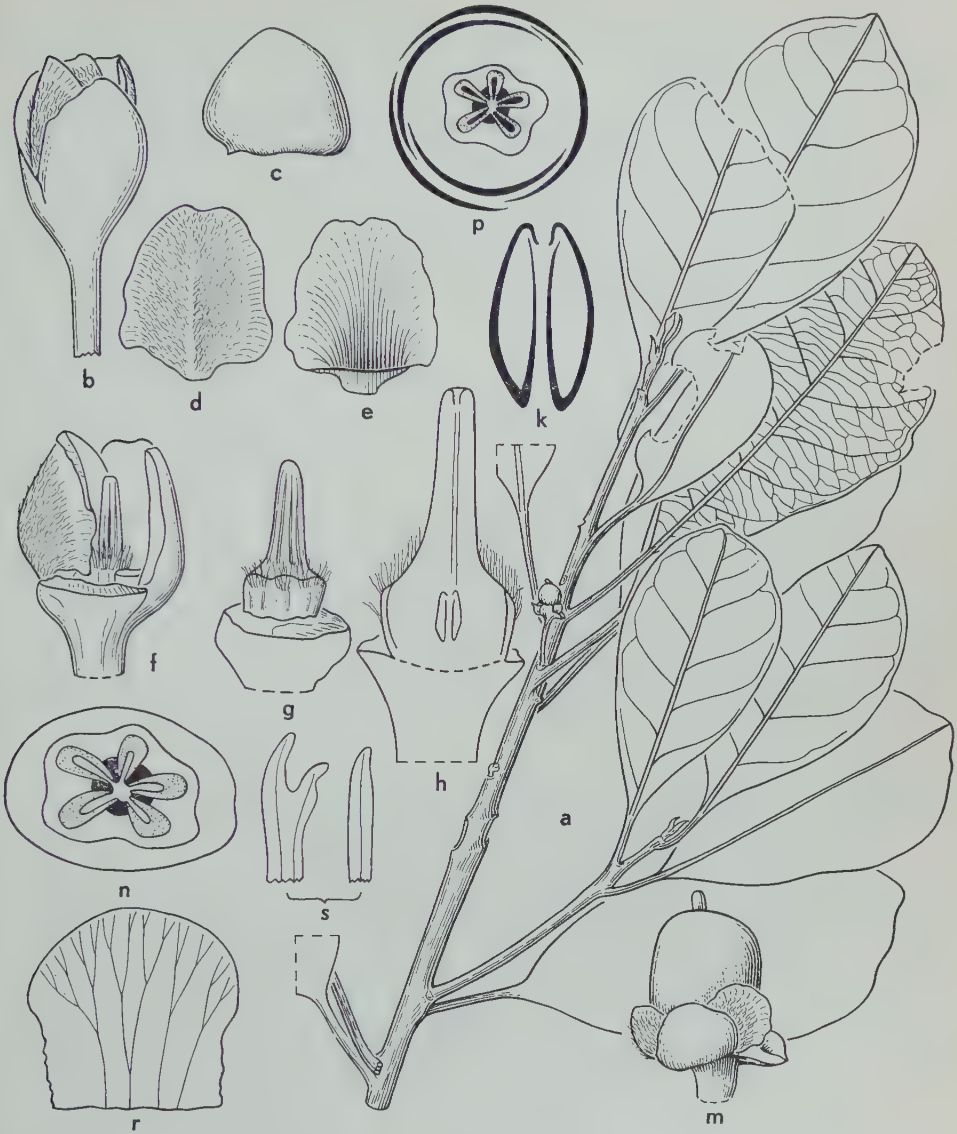

Fig. 44. *P. lamii,* a. habit, b. flowerbud, c. outer sepal, outside, d. inner sepal, outside, e. inner sepal, inside, f. bud with corolla and some sepals removed, g. gynaecium, h. longitudinal section of gynaecium, k. longitudinal section of placenta and ovules, m. juvenile fruit, n. transverse section of fruit, p. diagram of calyx and fruit, r. corollalobe, s. staminodes. (a–p. from *NIFS bb 14283,* r–s. from *NIFS bb 20255*).

margins subtransverse, prominent on either side; petioles 1—2.8 cm long, glabrous. *Flowers* solitary or in few-flowered clusters; pedicels c. 1 cm long, sericeous or tomentose, glabrescent. *Sepals* irregularly subrotundate, 2—3 by 2—3 mm, whitish sericeous or tomentose without but glabrescent, glabrous within, margins membranous. *Corolla* known young only, lobes orbicular, c. 1 mm in diam. *Stamens* unknown. *Staminodes* membranous, lanceolate, c. 0.7 mm long, with one or two acute tips. *Gynaecium* 0.3 cm long, disk 5-lobed, adnate to the ovary, ferruginously pilose and c. 2 by 1 mm large; style glabrous, sulcate, elongate-conoid, subabruptly contracted from the ovary. Immature *fruits* green, ellipsoid, c. 8 by 3 mm, style persistent, 5-seeded, pericarp fleshy, glabrous, black; complete seeds not seen, albumen copious, cotyledons foliaceous.

Type specimen: *NIFS bb 14283* in L.

Vern. name: lonaäng (Amboina).

Distr.: Amboina and Timor.

AMBOINA. near Siramau, alt. 450 m, old forest: *NIFS bb 14283* (BO, L), tree 16 m, fl. buds light green.

TIMOR. Kupang, Sisimeine, alt. c. 500 m: *NIFS bb 20255* (BO, L), fl. buds, Febr.

Remarks: Before this study of *Planchonella* started this species has been recognized by Professor Lam as representing a new species but a description has never been published. In honour of him, this species is given the name *Planchonella lamii.*

This species is related to *P. australis* and *P. obovata* as well as to *P. obovoidea,* but differs from the former in the different transverse nervation and in the obovate, rounded leaves and from *P. obovoidea* it differs in the transverse tertiary nervation, the smaller number of secondary nerves and in the absence of a broadened base of the style in the fruit. The fruit as described above seems to be rather mature and if this is so, it is much smaller than the fruit of *P. obovata,* which has moreover a membranous pericarp.

85. P. tenuipes (Krause) H. J. Lam, Nova Guinea 14, 4, 1932, 564, t. 123 — *Sideroxylon tenuipes* Krause, Engl. Bot. Jahrb. 58, 1923, 476 — *Pouteria tenuipes* (Krause) Baehni, 1942, 298, *p.p.*

Trees, 15 m. Branchlets terete, but angular between the leaves, 2—4 mm in diam., sparsely ferruginously pilose or tomentose, glabrescent. *Leaves* oblong, elliptic or obovate, 14—30 by 5—15 cm, apex obtuse, rotundate or subacute, base cuneate, abruptly attenuate and tapering into petiole; margin with whitish, narrow intramarginal nerve; membranous, glabrous, nitidous above, sericeous below, glabrescent; midrib subimpressed above, prominent below, sparsely hairy below, secondary nerves 8—10, ascending at an angle of 50°—60°, straight but curved near margin of leaf, archingly joined, tertiary nervation reticulate, subparallel to the secondary nerves, with a few transverse nerves which are almost parallel to the secondary ones and recurved near midrib, prominulous above and inconspicuous, prominent below; petioles 2.5—5 cm long, minutely crested above, glabrous. *Flowers* in many-flowered clusters; pedicels angular, 5—12 mm long, ferruginously sericeous. *Sepals* ovate-orbicular, 2—3 by 2—2.5 mm, ferruginously sericeous without, ferruginously sericeous within and along margin, inner ones smaller than outer sepals and with a fimbriate margin. *Corolla* 2.5—3.5 mm long, lobes rotundate, 1—1.5 by 1—1.5 mm, apex rounded. *Stamens* 1—1.5 mm long, inserted slightly below the middle, filaments subulate, c. 1 mm long, anthers ovoid, c. 1 mm long, apex acute, dehiscing laterally or introrse. *Staminodes* triangular, lanceolate or 4-sided, or subulate, c. 1 mm long. *Ovary* obconoid, c. 1 by 1.5 mm long, truncate at apex, 5-lobed, ferruginously hirsute; style stout, cylindrical, c. 0.5 mm long. *Fruits* not seen.

Type specimen: *Schlechter 18523* in B.

Lectotype specimen: *Schlechter 18523* in P.

Distr.: New Guinea.

New Guinea. Northeastern New Guinea, Bismarck Mts, alt. c. 300 m: *Schlechter 18523* (L, P), fl. buds Sept.

Remarks: As the type specimen in the Berlin Herbarium has been destroyed in 1943 the specimen in Paris has been chosen as representing the lectotype specimen.

In Lam's publication of 1932, t. 123, the tertiary nervation is not drawn in full accordance with the material as the transverse nerves are distinctly visible in the material, which, however, is not shown in Lam's drawing.

86. **P. membranacea** H. J. Lam, Blumea 5, 1, 1942, 11, f. 3 — *Pouteria ? membranacea* (H. J. Lam) Baehni, 1942, 411.

Trees, c. 7 m. Branchlets slender, terete, but irregularly angular in the lower parts, 3—5 mm in diam., glabrous but ferruginously or yellowish sericeous at the top and glabrescent. *Leaves* conferted at tip of branchlets, 16.5—24 by 6.4—7.5 cm, elliptic or elliptic-oblong, apex obtusely acuminate, acumen 8—15 mm long, base narrowly cuneate, decurrent; with a narrow, white, intramarginal nerve; membranous, glabrous on either side, nitidulous on either side; midrib flat or slightly grooved above, prominent below, secondary nerves 11—16, ascending at an angle of 55°—70°, straight or slightly curved, indistinctly archingly joined near margin by some thickened tertiary nerves or diminishing until inconspicuous, prominent on either side; tertiary nervation reticulate with a few transverse nerves which recurve near midrib, conspicuous on either side; petioles 6—10 mm long, flat above, rounded below, broadened at base, glabrous. *Flowers* unknown. *Fruits* solitary or two in each axil; pedicels terete, 3—5 mm long, glabrous. *Sepals* rotundate, 2—3 by 2—3 mm, outer ones glabrous on either side, inner ones appressedly pubescent without, glabrous within. *Fruits* ovoid, c. 2 by 1.5 cm, 4- or 5-seeded, pericarp hard, thick, dark brownish black, glabrous, style persistent; seeds fusiform, compressed at the side of the scar, c. 1.3 by 0.3 by 0.2 cm, subacute at either end, yellowish brown, nitidous, scar linear, as long as the seed, c. 0.5 mm wide, embryo unknown.

Type specimen: *A. C. Smith 1491* in BISH.

Distr.: Fiji.

Fiji. Vanua Mbalavu, northern limestone section, alt. 0—200 m, forest: *A. C. Smith 1491* (A, BISH, L, S), fr. April.

87. **P. peekelii** (Krause) H. J. Lam, Nova Guinea 14, 4, 1932, 564, t. 122 — *Sideroxylon peekelii* Krause, Engl. Bot. Jahrb. 58, 1923, 477 — *Pouteria tenuipes* (Krause) Baehni, 1942, 298, *p.p.*

Trees, up to 15 m. Branchlets terete, 3—5 mm in diam., compressed at the nodes, ferruginously tomentose when young, glabrescent, purplish grey. *Leaves* scattered, elliptic or oblong-obovate, 12—25 by 4—12 cm, apex obtuse or obtusely acuminate, acumen 2—5 mm long, base cuneate, sometimes slightly oblique, tapering along petiole; with a narrow intramarginal nerve; membranous or chartaceous, yellowish sericeous pilose when young, glabrescent and nitidulous on either side; midrib impressed above and minutely crested, prominent below, secondary nerves 9—16, ascending at an angle of 60°—65°, straight, but curved near margin, archingly joined by some thickened tertiary nerves, prominulous above, prominent below, tertiary nervation mainly parallel to secondary ones, laxly reticulate, with a few transverse nerves subparallel to the secondary nerves, near midrib with a few recurved ones, prominulous above, prominent below; petioles 1.5—3.5 cm long, flat or slightly grooved above, glabrous. *Flowers* ♀ and ♂, in few-flowered clusters; pedicels angular, 2—12 mm long, yellowish sericeous or tomentose. *Sepals* 5, outer ones broadly deltoid, 1—1.5 by 2.5—3 mm, yellowish tomentose on either side, margin fimbriate, inner sepals squamiform, c. 2 by 2 mm, broadly obtusely acuminate or obtuse at apex, yellowish tomentose on either side, margin fimbriate. *Corolla* 3—4 mm long, lobes ovate, c. 1.5 by 1.5 mm, apex rounded. *Stamens* c. 1.5 mm, inserted in the basal fourth, filaments subulate, c. 1 mm long, anthers ellipsoid, c. 0.8 mm long, apex emarginate, dehiscing laterally, either end of thecae acute. *Staminodes* narrowly triangular, c. 0.5 mm long, acute at apex. *Ovary* broadly conoid, star-shaped at the base, apex abruptly narrowed, c. 1 by 1.5 mm, 5-celled, base yellowish hirsute; style short, solid, cylindrical, 0.5—1 mm long, with 5 stigmas at apex. *Fruits* pyriform, 2.2 by 1.3 by 0.9 cm, one-seeded, dark brown, nitidous, pericarp thin, wrinkled when dry; seeds pyriform, 1.9 by 1.1 by 0.9 cm, brown, nitidous, scar nearly as long as seed, 4—4.5 mm wide, light greyish-brown, albumen copious, cotyledons foliaceous, radicle cylindrical, c. 1 mm long, apex obtuse, shortly exsert.

Type specimen: *Peekel 676* in B.

Neotype specimen: *Haas NGF 158* in L.

Distr.: New Ireland and New Britain.

NEW IRELAND. Rapuat near Namatanai, scrub: *Peekel 676*, fl. Oct., *ex litt.*

NEW BRITAIN. Jacquinot Bay: *Haas NGF 158* (BRI, L, LAE), small tree, fl. Febr., fr. in BRI only.

Remarks: The fruit has been described from *Haas NGF 158* in the Brisbane Herbarium.

88. **P. micronesica** (Kanehira) Kanehira ex H. J. Lam, Blumea 5, 1, 1942, 12 — *Sideroxylon micronesicum* Kanehira, Bot. Mag. Tokyo 46, 1932, 671 — *Chrysophyllum sp.* ?, Baehni, 1942, 428 — *Fig. 45.*

Trees, up to 7 m. Branchlets hollow, 3—6 mm in diam., distinctly ribbed, glabrous. *Leaves* scattered, elliptic or obovate-oblong, 24—35 by 9—11 cm, (10—13 by 5—7 cm in *Hosokawa 9490*), apex acutely or obtusely acuminate, acumen 1—3 cm long, base cuneate and abruptly narrow-

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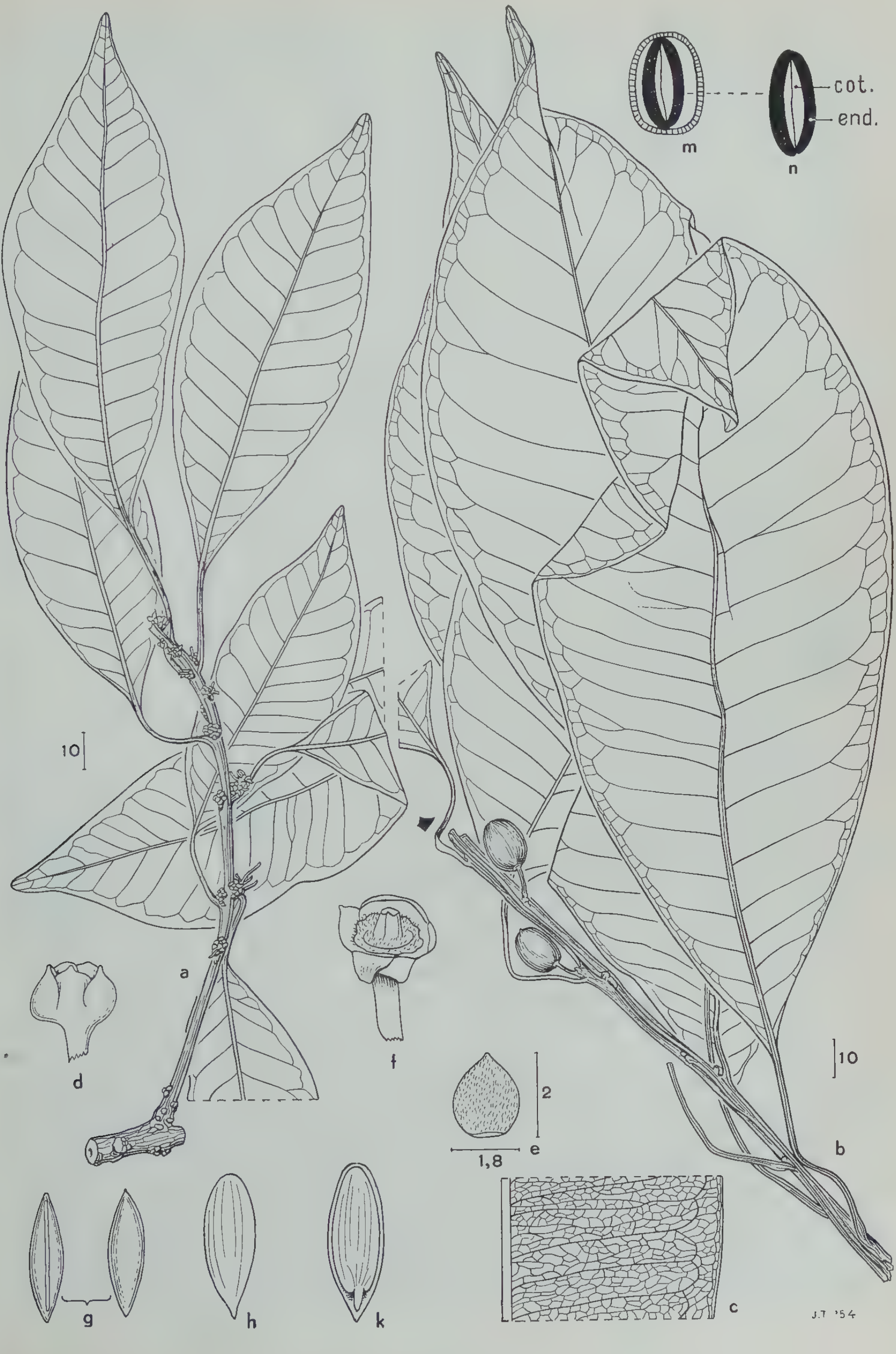
Fig. 45. *P. micronesica*, a. flowering branch, b. fruiting branch, c. part of leaf, d. flowerbud, e. outer sepal, outside, f. opened bud showing gynaecium only, g. seed, h. embryo lateral view, k. longitudinal section of embryo, m. transverse section of seed, n. transverse section of embryo. (a, c, d, e, f. from *Hosokawa 9490*, b, g—n. from *Hosokawa 9438*).



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ed, very shortly decurrent along sides of petiole; with a narrow intramarginal nerve, glabrous on either side, nitidous above, nitidulous below; midrib broadly grooved above, prominent below, secondary nerves 18—23 (13—15 in *Hosokawa 9490*), ascending at an angle of 60°—80°, but up to 90° in the basal part, slightly sinuous, forked near margin, archingly joined, prominent on either side, tertiary nervation laxly reticulate, subparallel to the secondary nerves, prominent on either side, often 1—3 nerves between each pair of secondary nerves more distinct and subparallel to the latter, prominent on either side, outside the arch of secondary nerves forming an irregularly undulating marginal nerve; petioles 1.5—6 cm long, broadly grooved above, at least in the apical part, rounded below, glabrous. *Flowers* clustered; pedicels terete or angular, 5—6 mm long, yellowish sericeous. *Sepals* suborbicular or broadly ovate, c. 2 by 2 mm, apex obtusely mucronate, yellowish sericeous without, glabrous within. *Corolla, stamens* and *staminodes* unknown. *Ovary* disciform, 10-lobed, c. 0.5 by 1—1.5 mm, yellowish tomentose; style stout, conoid, c. 1 mm long, 5-sulcate, with 5 distinct stigmas. *Fruits* ellipsoid or obovoid, 1.2—1.5 by 1—1.1 by 0.6—0.8 cm, 2—4-seeded, with a short remnant of the style at apex, pericarp thin, brownish or greyish, dull, glabrous; seeds fusiform, flat at the side of the scar, c. 11 by 5 by 3 mm, obtuse at either end, apex sometimes mucronate, nitidous, brown, lighter coloured towards the scar, the latter linear, c. 1.5 mm wide, whitish, dull, albumen copious, cotyledons foliaceous, radicle stout, c. 1.5 mm long, apex obtuse, exsert.

Type specimen: *Kanehira 1322* in L.

Distr.: Carolines (Kusaie Island).

CAROLINES. Kusaie, without known loc.: *Kanehira 1322* (L), fr. June; Mt Iyawoe: *Hosokawa 9438* (K), fr. July; Inrão: *Hosokawa 9490* (K), fl. Aug.

Remarks: The floral details as far as could be observed are described from *Hosokawa 9490* in K.

89. **P. solida** van Royen, nov. sp. — *Pag. 433 and fig. 46.*

Trees, c. 30 m. Branchlets subangular, 2—3 mm in diam., sparsely yellowish sericeous, glabrescent. *Leaves* subconferted near tip of branchlets, elliptic or obovate, 18—24 by 8.5—10.5 cm, apex acutely acuminate, acumen c. 1 cm long, base broadly cuneate and abruptly narrowed, short decurrent; with a narrow marginal nerve, membranous, glabrous on either side, in vivo light green, midrib flat above, rounded below, prominulous on either side, secondary nerves 13—20, ascending at an angle of 60°—70° (c. 45° in the apical part), curved or subsinuous, archingly joined, sometimes diminishing until inconspicuous and joined by some thickened tertiary nerves only, prominent on either side, tertiary nervation laxly reticulate, subparallel to the secondary nerves, subtransverse near margin, often one between each pair of secondary nerves more distinct and subparallel to secondary nerves, prominulous on either side; petioles 6—12 mm long, slightly flat above, glabrous, but in the most apical leaves with a few brownish hairs. *Flowers* solitary or in few-flowered clusters, known in bud only; pedicels terete, 6—9 mm long, sparsely ferruginously sericeous. *Sepals* ovate or triangular-ovate, 3.5—4.5 by 3—3.5 mm, apex obtuse, sparsely yellowish or brownish sericeous on either side, inner sepals with membranous margins. *Corolla*

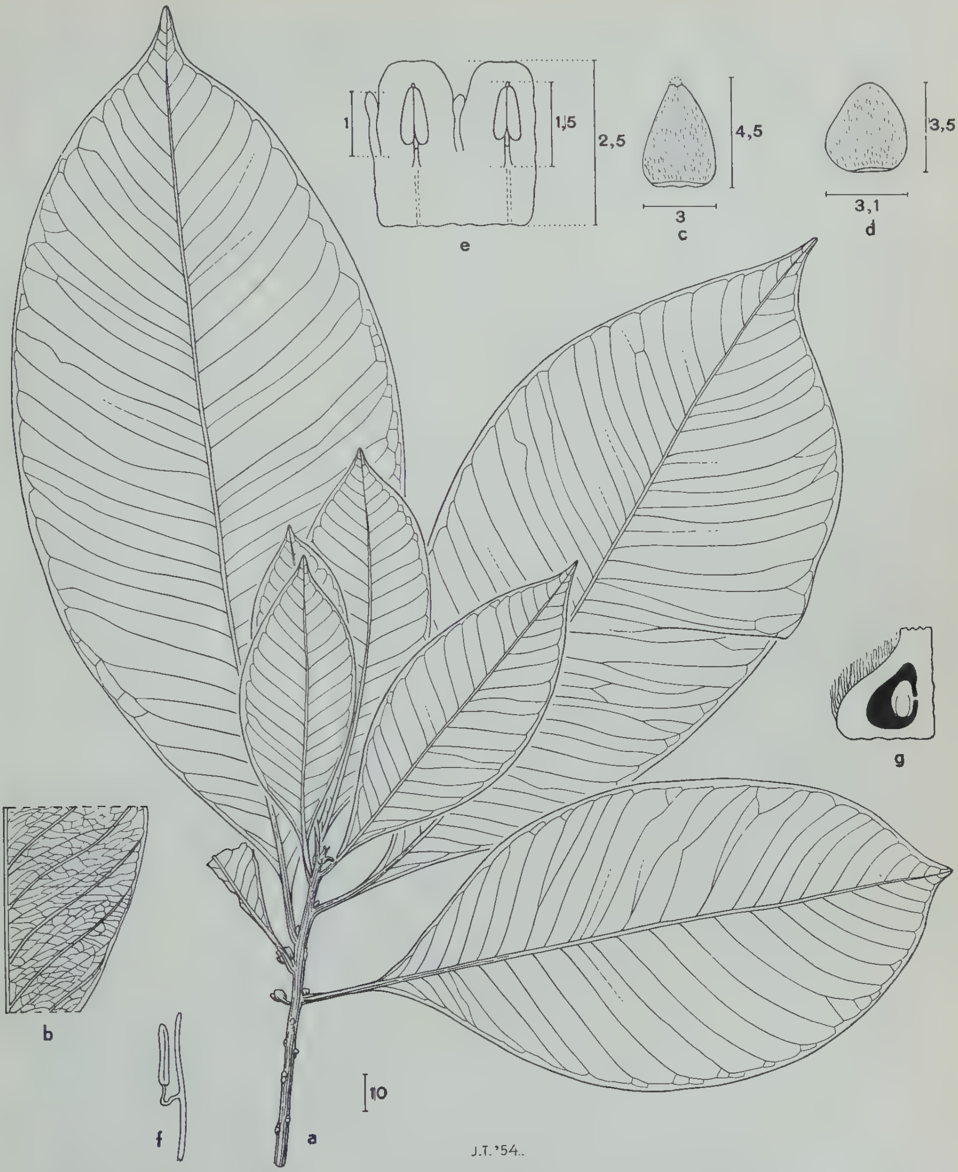

Fig. 46. *P. solida,* a. habit, b. part of leaf, c–d. outer sepal, outside, e. part of corolla, inside, f. radial section of corolla showing the sinuous filament, g. longitudinal section of gynaecium. (*Fryar 3344*).

2—3 mm long, lobes subquadrangular, c. 1 by 1 mm, apex truncate or retuse. *Stamens* 1—1.5 mm long, inserted slightly below the middle, filaments linear, sinuously bent, c. 0.5 mm long, anthers ovoid, c. 1 mm long, apex obtuse or obtusely mucronulate, dehiscing laterally. *Staminodes* lanceolate-oblong, c. 1 mm long, apex obtuse or retuse, and flat as well. *Ovary* subglobose, c. 1 mm in diam., 5-lobed, ferruginously hirsute; style stout, 5-sided, 1—1.5 mm long. *Fruits* globose, c. 1.5 cm in diam., glabrous, style marcescent, sunk into apex, with slightly broadened base; seeds unknown

Type specimen: *Fryar 3344* in SING.

Distr.: New Guinea.

NEW GUINEA. Northeastern New Guinea, Morobe distr., Yalu, near Lae: *Fryar 3344* (LAE, SING), tree c. 30 m, fl. March; near Lae, in rainforest: *White c.s. 1653* (= *NGF 1653*) (BRI, L), fr. pale green or tinged with purple, July.

Remarks: This new species is closely related to *P. micronesica, P. membranacea* and *P. peekelii.* From *P. micronesica* and *P. peekelii* it differs in the membranous leaves, a detail which it has in common with *P. membranacea.* From *P. peekelii* it differs in the larger numbers of secondary nerves (13—20 against 8—13), the shorter petioles and the presence of one or more distinctly developed tertiary nerve between each pair of secondary nerves, these being subparallel to the latter. Moreover it differs in the longer pedicels and the larger leaves. From *P. membranacea* it differs in the elliptic, narrowed leaves, in the larger number of secondary nerves and the smaller angle between secondary nerves and midrib. From *P. micronesica* this new species differs in the slender secondary nerves and the smaller angle between the secondary nerves and midrib, especially in the basal part (c. 90° in *P. micronesica,* c. 60°—70° in *P. solida*), in the flat but not grooved midrib above, in the shorter petioles and in the slender branchlets.

The specific epithet has been derived from the property of the wood, and that it is very hard to axe.

90. P. chrysophylloides H. J. Lam, Nova Guinea 14, 4, 1932, 566, t. 126 — *Chrysophyllum ledermannii* Krause, Engl. Bot. Jahrb. 58, 1923, 485 — *Pouteria lamii* Baehni, 1942, 313.

Shrubs or trees, up to 15 m. Branchlets terete, glabrous or greyish brownish pubescent. *Leaves* alternate, oblong-lanceolate, 6—12 by 2.5—4 cm, apex obtusely acuminate, base rather abruptly narrowed and sometimes oblique, decurrent; chartaceous, glabrous, but the juvenile leaves sericeous or pilose, glabrescent, nitidous on either side; midrib prominent on either side, secondary nerves 13—18, ascending at an angle of 40°—50°, slightly curved, archingly joined, prominulous on either side, tertiary nervation reticulate, parallel to the secondary nerves; petioles 6—10 mm long, canaliculate above. *Flowers* ♀ or ♂, in few-flowered clusters; pedicels slender, 4—10 mm long, pubescent. *Sepals* ovate or ovate-lanceolate, c. 1.5 by 1 mm, apex subacute, pilose without, glabrous within (?). *Corolla* white or greenish-white, c. 3 mm long, lobes ovate or ovate-oblong, c. by 1.5 mm. *Stamens* inserted in the basal fourth, filaments very short, anthers oblong, c. 1 mm long, apex obtuse. *Staminodes* oblong, apex truncate or retuse, sometimes absent. *Ovary* ovoid-conoid, appressedly pilose; style stout, short, not distinctly marked against the ovary. *Fruits* unknown.

Type specimen: *Ledermann 11343* in B.

Distr.: New Guinea.

NEW GUINEA. Northeastern New Guinea, Sepik region, Hunstein Peak, alt. 1300 m, forests: *Ledermann 11239, 11317, 11343,* fl., *ex litt.*

Remarks: As I have not seen any of the three specimens mentioned above and which probably have been destroyed in the 1943 disaster in Berlin, Lam's plate 566 in Nova Guinea, 1932, and Krause's description, 1923, must provisionally be regarded as the base of this species.

The specific epithet *chrysophylloides* has been used by Lam (1932) as he already made a new combination in *Planchonella* with the epithet *ledermannii*, based on *Sideroxylon ledermannii* Krause, 1923, 475.

91. P. sandwicensis (Gray) Pierre, Not. bot. Sapot., 1890, 36; H. J. Lam, Blumea 5, 1, 1942, f. 4; H. J. Lam, Occ. Papers, B. P. Bish. Mus. 21, 1954, 210 — *Sapota sandwicensis* A. Gray, Proc. Am. Acad. Sc. 5, 1862, 328 — *Pouteria sandwicensis* (A. Gray) Baehni & Degener in Degener, Fl. Hawaiensis 1, 1938, 23; Baehni, 1942, 299.

Trees or shrubs, 4.5—12(—20) m. Branchlets slender, terete or angular, 3—7 mm in diam., ferruginously or blackish appressedly pubescent or rarely subglabrous, the mature branchlets glabrous or subglabrous. *Leaves* markedly variable in size, shape, thickness, colour and indumentum, oblong, elliptic, ovate, obovate or obovate-oblong or more rarely almost circular, (1.2—)3—15(—31.5) by (0.6—)1.3—7.5(—10.3) cm, apex obtuse or obtusely acuminate, entire or emarginate, base cuneate, narrowing into petiole and shortly decurrent; margin sometimes involute, with a narrow intramarginal nerve, chartaceous, subchartaceous, subcoriaceous or coriaceous, yellowish or ferruginously sericeous or tomentose above but glabrescent and nitidous above, except along midrib and then blackish, whitish, ferruginously, brown or brownish white woolly, tomentose or sericeous below and glabrescent; midrib flat or broadly grooved above, prominent below, secondary nerves 6—50, often not distinct enough to separate from some tertiary nerves, ascending at an angle of (45°—)50°—80°(—90°), straight or slightly curved, archingly joined very close to margin of leaf with nearly straight arches, sometimes forming an intramarginal nerve, the arches in central part of leaf sometimes broken in 2—4 smaller ones when the tertiary nerves reach the margin, tertiary nervation reticulate, parallel to the secondary nerves, sometimes 1—3 between each pair of secondary nerves developed as distinct as the latter thus enlarging their number up to 50; petioles (0.5—)1.2—3.5(—4) cm, flat or broadly grooved above, yellowish, greyish or ferruginously puberulous or sericeous. Inflorescences 1—4(—12)-flowered; pedicels slender or stout, angular, 0—30 mm long, ferruginously sericeous or greyish or golden-brown tomentose. *Sepals* suborbicular, ovate or deltoid, 2.5—5.5 by 2—4.5 mm, rounded, obtuse or acute at apex, ferruginously, greyish or yellowish brown tomentose, puberulous or woolly without, glabrous within. *Corolla* pale green, somewhat exsert, 3—6 mm long, lobes ovate, 2—4 by 1—2.5 mm, rounded or broadly obtusely acuminate at apex. *Stamens* 2.5—3.5 mm long, inserted halfway up the corolla, filaments subulate, 1.5—2 mm long, often the upper portion curved inwards when young, anthers ovoid, cordate or oblong, 1.5—2 mm long, apex obtuse or mucronulate, dehiscing extrorsely or laterally. *Staminodes* petaloid, oblong-obovate or ligulate, 1.5—2.5 by 0.5—1.3 mm, rounded or acute at apex. *Gynaecium* conoid, 3—4 by 1.5—2.5 mm, 5-lobed at base, densely hirsute up to a half, base surrounded by a, usually entirely, rarely partly, free disk, which is densely hirsute; style cylindrical or slightly tapering. *Fruits* mostly solitary or two together, rarely three together; pedicels 2—3.5 cm long, sepals hardly larger than in flower but often patent or somewhat reflexed and up to 1 cm in diam. *Fruits* globose, pyriform, obpyriform or obovoid-oblong, 1.5—5 by 1—3 cm, apex rounded or distinctly beaked, sometimes slightly furrowed, 1—5-seeded, when ripe greyish, white, yellow, orange or reddish to blackish purple, the fleshy pericarp mostly yellowish, or brownish puberulous but often glabrescent, rather thick, hard when dry, but either hard or fleshy when living, in one-seeded fruits thin; seeds ellipsoid or ovoid, laterally compressed, 1—3.8 by 0.5—1.7 by 0.4—0.7 cm, acute or rounded at either end, light brown yellowish, nitidous, testa very hard and bony or thin and flexible, scar nearly as long as the seed, 1—4 mm wide, albumen copious, cotyledons foliaceous, radicle hardly or fairly exsert, 1—2 mm long, obtuse at apex.

Type specimen: *Rémy 478* in P.

Distr.: Hawaiian Islands.

Var. **sandwicensis** — *P. sandwicensis* (A. Gray) Pierre, var. *typica* H. J. Lam, Blumea 5, 1, 1942, 24 — *Pouteria sandwicensis* (A. Gray) Baehni & Degener, var. *typica* H. J. Lam, Baehni, 1942, 300.

Pedicels 1—3 cm long, in fruit elongate and up to 3.5 cm long. *Leaves* mostly longer than 6 cm and with rounded apex, rarely smaller or with acute apex. *Sepals* rounded, sometimes subacute at apex. *Fruits* mostly large, with rounded tip. Trees up to 20 m.

Type specimen: *Rémy 478* in P.

Distr.: Hawaii Islands.

Forma **sandwicensis** — *P. sandwicensis* (A. Gray) Pierre, var. *typica* H. J. Lam, forma *typica* H. J. Lam, l. c. 1942, 24 — *Pouteria sandwicensis* (A. Gray) Baehni & Degener, var. *typica* H. J. Lam, forma *typica* H. J. Lam, Baehni, 1942, 300.

Flowers 1—3(—4) in each axil.

Type specimen: *Rémy 478* in P.

Distr.: Lanai, Kauai. Oahu, Molokai, Maui.

LANAI. without known loc.: *Rémy 478* (L, P), fl.
See for the other localities: Lam 1942, 24—26.

Forma **puulupensis** (Baehni & Degener) H. J. Lam, l. c. 1942, 26 — *P. puulupensis* Baehni & Degener in Degener, Fl. Hawaiiensis 3, 1938, 23 — *Pouteria sandwicensis* (A. Gray) Baehni & Degener, var. *typica* H. J. Lam, forma *puulupensis* (Baehni & Degener) H. J. Lam, Baehni, 1942, 300.

Flowers (1—4)4—7 in each leaf-axil.

Type specimen: *Degener c.s. 11067* in BISH.

Distr.: Oahu.

OAHU. Koolau Range, Puulupe, Kawailoa forest: *Degener c.s. 11067* (BISH, G, L), fl. buds, Febr.
See for other localities: Lam 1942, 26.

Transitional forms between forma *sandwicensis* and forma *puulupensis* are reported from Oahu, Molokai, Lanai, Maui, and Hawaii (f. Lam 1942, 26).

Var. **spathulata** (Hillebrand) H. J. Lam, l. c. 1942, 26 — *Sapota sandwicensis* A. Gray, var. *β*, Proc. Am. Ac. Sc. 5, 1862, 328 — *Sideroxylon* *spathulatum* Hillebrand, Fl. Hawaii Isl., 1888, 277 — *Sideroxylon auahiense* Rock, Coll. Haw. Publ. Bot. Bull. 1, 1911, 18, t. 5 — *Planchonella spathulata* (Hill.) Pierre in Dubard, 1912, 52 — *Sideroxylon ceresolei* Rock, Indig. Trees Hawaii Isl., 1913, 385 — *Planchonella densiflora* (Hill.) Pierre, in msc. — *Planchonella meeboldii* Baehni & Degener in msc. — *Pouteria sandwicensis* (A. Gray) Baehni, var. *spathulata* (Hill.) H. J. Lam, Baehni, 1942, 300.

Pedicels 0—0.8 cm, in fruit not or hardly elongate. *Leaves* 3—12 cm, tip rounded or often subacute. *Sepals* mostly acute. *Fruits* often small and sometimes beaked at apex. Shrubs or small trees, up to 10 m.

Type specimen: *Rémy 475* in P.

Distr.: Hawaiian Islands.

Forma **spathulata** — *P. sandwicensis* (A. Gray) Pierre, var. *spathulata* (Hill.) H. J. Lam, forma *typica* H. J. Lam, l. c., 1942, 26 — *Pouteria sandwicensis* (A. Gray) Pierre, var. *spathulata* (Hill.) H. J. Lam, forma *typica* H. J. Lam, Baehni, 1942, 300.

Flowers 1—3(—4) in a leaf-axil.

Type specimen: *Rémy 475* in P.

Distr.: Kauai, Oahu, Molokai, Lanai, Maui, Hawaii.

Lanai, without known loc.: *Rémy 475* (L, P), fl.
See for other localities: Lam 1942, 27.

Forma **densiflora** (Hill.) H. J. Lam, l. c. 1942, 28 — *P. densiflora* (Hill.) Pierre, in msc, f. H. J. Lam, l. c. 1942, 14 — *Sideroxylon spathulatum* Hill., var. *densiflorum* Hill., Fl. Haw. Isl., 1888, 277 — *Pouteria sandwicensis* (A. Gray) Baehni & Degener, var. *spathulata* (Hill.) H. J. Lam, forma *densiflora* H. J. Lam, Baehni, 1942, 300.

Flowers (1—)4—7(—12) in a leaf-axil.

Type specimen: *Hillebrand s.n.* in B.

Lectotype specimen: *Hillebrand s.n.* in P.

Distr.: Oahu, Hawaii.

Oahu. Waianae Range, Kaala: *Hillebrand s.n.* (P).
See for other localities: Lam 1942, 28.

A transitional form between forma *spathulata* and forma *densiflora* is reported from Kanai (*Rock 2336* in BISH).

92. P. crocodiliensis van Royen, nov. sp. — *Pag. 433.*

Shrubs or trees ? Branchlets angular, 2—4 mm in diam., greyish or ferruginously woolly, glabrescent. *Leaves* conferted at tip of branchlets, spatulate, 2—4 by 0.2—1.1 cm, apex acutely acuminate, acumen 1—2.5 mm long, tapering into petiole and long decurrent; intramarginal nerve inconspicuous; membranous or papyraceous, greyish woolly or sericeous on either side, glabrescent above; midrib flat above, prominent below, secondary nerves 4—6, ascending at an angle of 45°—55°, curved, indistinctly archingly joined, prominulous on either side, tertiary nervation reticulate, impressed on either side or prominulous below; petioles 8—13 mm long, flat above, greyish woolly or sericeous. *Flowers* in few-flowered clusters, known in bud only; pedicels flat above, 8—13 mm long, greyish woolly or sericeous. *Sepals* orbicular or broadly ovate, 1.5—2.5 mm in diam., apex obtuse, sometimes broadly retuse, greyish sericeous without, margin fimbriate, glabrous within, inner sepals with membranous margin. *Corolla* c. 0.9 mm long, lobes obovate, c. 0.5 by 0.3 mm, apex obtuse. *Stamens* incompletely known, inserted at the base, filaments subulate, c. 0.5 mm long, anthers unknown. *Staminodes* oblong, 0.2—0.3 mm long, apex obtuse. *Ovary* ovoid, c. 0.7 by 0.5 mm, apex truncate. *Fruits* obovoid, c. 2.5 by 2 cm; style broadened at base but style itself absent, 5-seeded, pericarp fleshy, glabrous except at base; seeds obliquely fusiform, laterally compressed, c. 15 by 7 by 5 mm, glossy brown, scar slightly shorter than seed, c. 2.5 mm wide, white, dull, albumen copious, cotyledons foliaceous, radicle unknown. Calyx in fruit spreading, up to 6 mm in diam.

Type specimen: *Wilkins 216* in BM.

Distr.: Crocodile Island.

AUSTRALIA. Northern Territory, Crocodile Island: *Wilkins 216* (BM), fl. buds & fr., Dec.

Remarks: This species is to be recognized by its small, greyish pubescent leaves which in their size resemble those of *P. cotinifolia*, but differ in shape by their long attenuate base and the acuminate tip. It slightly resembles *P. obovata* in its leaves but differs from that species in the smaller leaves, the smaller number of secondary nerves and in the greyish sericeous pubescence. In its broadened base of the style in the fruit this species resembles *P. arnhemica, P. pohlmaniana, P. obovoidea* and *P. chartacea.* It is most closely related to the last-named species but in *P. chartacea* the leaves are glabrous and much larger even in the youngest one.

The specific epithet has been derived from the name of the island where it has been collected.

93. **P. chartacea** (F. v. M.) H. J. Lam, 1925, 217; Francis, Austr. Rainf. Trees, ed. 2, 1951, 358 — *Achras chartacea* F. v. M. in Bentham, Fl. Austr. 4, 1869, 281 — *Sideroxylon chartaceum* (F. v. M.) Baehni, 1942, 428 — *Sersalisia chartacea* (F. v. M.) Domin, Bibl. Bot. 89, 1928, 1062.

Shrubs or trees, 5—32 m. Branchlets compressed or angular, 2—5 mm in diam., grey, glabrous. *Leaves* scattered or conferted at tip of branchlets, obovate or spatulate, (4—)9—20 by (1.5—)3—6 cm, apex acutely or obtusely acuminate, acumen 2—15 mm long. gradually tapering towards the base; with a narrow intramarginal nerve, coriaceous, glabrous on either side, blackish or brownish above and nitidous, olivaceous below and dull; midrib prominent on either side, minutely crested above, secondary nerves 7—15, straight, ascending at an angle of 55°—60°, archingly joined, prominent on either side, tertiary nervation laxly reticulate, sometimes one nerve between two secondary nerves more distinct and subparallel to the secondary nerves, prominulous but distinct on either side; petioles 3-sided, 7—12 mm long, flat above, glabrous. *Flowers* white, in 3—7-flowered clusters; pedicels filiform, 5—8 mm long, yellowish sericeous or puberulous. *Sepals* ovate, 3.5—4.5 by 2.5— 3.2 mm, apex subacute, yellowish sericeous without and within at the apex only. *Corolla* 3.5—4.5 mm long, lobes quadrangular, c. 1.5 by 1.5 mm, apex truncate. *Stamens* c. 1.5 mm long, inserted in the middle, filaments subulate, c. 1 mm long, often sinuously curved, anthers ellipsoid, c. 1 mm long, apex obtuse, mucronate, dehiscing laterally. *Staminodes* lanceolate-ligulate, 1—1.5 mm long, apex obtuse. *Gynaecium* longly conoid, 3.5—4.5 mm long, 5-sided or 5-winged, densely ferruginously hirsute, disk adnate, densely ferruginously hirsute. *Fruits* ovoid or globose, 1.5—2.2 by 0.5—1.5 cm, 2—5-seeded, base of style broadened and provided with a ring of ferruginous hairs, pericarp thin, glabrous, dullish; seeds ellipsoid, laterally compressed, 9—20 by 5—10 by 3—7 mm, subacute at either end, brown, nitidous, scar linear, half as long as the seed, c. 1 mm wide, white, dull, albumen copious, cotyledons foliaceous, radicle cylindrical, 2—2.5 mm long, obtuse.

Type specimen: *Dallachy s.n.* in MEL.

Vern. name: gum (New Guinea).

Distr.: Australia, New Guinea, Kai Islands and Morotai.

Australia. Tallebudgera Scrubs: *Scortechini s.n.* (BRI, MEL), fl.; Kin Kin: *Francis s.n.* (BRI), fr.; Johnstone river: *Michael 119 & 129* (BRI), shrub or small tree, fr. May; Tamoshanta Point: *Dallachy s.n.* (BRI, MEL), fr. green, Aug.; Wide Bay distr., Boonooroo: *Petrie 158a* (BRI), fr. Oct.; Fraser Island: *Petrie 128* (BRI), fl. May; Eumundi: *de Beuzeville s.n.* (BRI), fr. Aug.

New Guinea. Western New Guinea, Middle Merau river, between Kweel and Erambuh, alt. c. 30 m, in large almost uniform stands on frequently inundated river-banks: *van Royen 4808* (L), tree c. 7 m, fr. Aug. — Northeastern New Guinea, Morobe distr., Sattelberg, alt. c. 1100 m: *Clemens 1080* (A, B, L), fl. Dec.; Kohari Mts: *Schulze 43*, fl. Aug. *ex litt.* — Southeastern New Guinea, Middle Fly river, Lake Daviumbu: *Brass 7955* (A, L), fr. Sept.; ibidem, frequently inundated lake-shores: *Brass 7660* (A, L), tree 3—5 m, with adventitious roots.

Kai. without known loc.: *Jaheri 141 & 142* (L), fr.

Morotai. Tobelo, flat country, clayey soil, alt. c. 30 m, old primary forest: *Tangkilisan 112* (= *NIFS bb 33806*) (BO, L), tree 32 m, fl. May; ibidem: *Tangkilisan 252* (= *NIFS bb 33922*) (BO, L), tree 30 m, fr. July.

Remarks: Some specimens of this species are at first glance rather difficult to distinguish from *P. linggensis* but they differ in some important details, viz. the partly pubescent inner side of the sepals, a detail also found when in fruit, the stout reticulate, tertiary nervation and the broader leaves, especially in the larger ones, the short broadly and obtusely acuminate tip of the leaves and the broadened base of the style in the fruit. In some specimens the leaves have a longer and more acute tip and the tertiary nervation is sometimes more parallel to the secondary nerves. It is quite possible that under *P. linggensis* some sterile specimens might in fact belong to *P. chartacea* and the areas of either species may be different than are given here. On the whole the leaves of *P. chartacea* are obovate, while those of *P. linggensis* are more often lanceolate-elliptic.

94. P. velutina (Elmer) H. J. Lam, 1925, 215; H. J. Lam 1927, 475 — *Sideroxylon velutinum* Elmer, Leafl. Phil. Bot. 5, 1913, 1834 — *Pouteria velutina* (Elmer) Baehni, 1942, 380 — *Sideroxylon bulusanensis* Elmer, *in msc.*

Trees. Branchlets terete, 3—5 mm in diam., sparsely whitish sericeous. *Leaves* scattered or subconferted, oblong-obovate, obovate or elliptic, (9—)15—25 by 4—8 cm, apex acute or subacutely acuminate, acumen 5—12 mm long, base narrowly cuneate, tapering into and decurrent along sides of petiole; with a narrow intramarginal nerve, chartaceous, glabrous and nitidous above, whitish or ferruginously sericeous or velutinous below, sometimes nerves and midrib ferruginously sericeous and the leaf whitish sericeous; midrib prominulous above, minutely crested, prominent below, secondary nerves 9—16, ascending at an angle of 50°—60°, curved, mostly indistinctly archingly joined or diminishing until inconspicuous, prominulous above, prominent below, tertiary nervation transverse or subparallel to the secondary nerves, recurved near midrib; petioles 1.5—3.5 cm long, flat or concave above, whitish sericeous. *Flowers* in rather many-flowered clusters; pedicels angular, 8—12 mm long, whitish sericeous. *Sepals* orbicular, 2.5—3 mm in diam., apex obtuse, whitish or yellowish sericeous without, glabrous within, inner ones with membranous and fimbriate margin. *Corolla* 4—5 mm long, lobes ovate, 2—3 by 2—2.5 mm, apex obtuse. *Stamens* 4—4.5 mm, inserted in the basal fourth, filaments linear, 3.5—4 mm, anthers ellipsoid or ovoid, compressed, 1—1.5 mm long, apex obtuse, dehiscing laterally. *Staminodes* subulate, 0.7—1.5 mm long. *Gynaecium* conoid, 1.5—2 mm long, base surrounded by a ferruginously or yellowish hirsute 10-lobed disk; style c. 1 mm long, stout, grooved. *Fruits* globose or obliquely obovoid, 1—1.5 by 0.5—1.4 by 0.4—0.6 cm, one-seeded, with a short remnant of style, glabrous or sparsely whitish pilose, pericarp fleshy; seeds obpyriform, c. 1 by 0.5 by 0.3 cm, subacute at either end, blackish or brown, nitidous, scar as long as seed, 1—1.5 mm wide, testa crustaceous, albumen copious, cotyledons foliaceous, radicle cylindrical, c. 1 mm long, obtuse.

Type specimen: *Elmer 13130* in PNH.

Distr.: Philippines.

Remarks: Though the tertiary nervation is transverse this species is included in this group on account of the disk and the ciliate margin of the inner sepals while, moreover, the fleshy fruit with a thin pericarp closely resembles that of *P. obovata.* Also the whitish pubescence of the sepals was one more reason to include *P. velutina* in the '*obovata*'-group.

Var. **velutina** — *P. velutina* (Elmer) H. J. Lam, var. *typica* H. J. Lam, 1925, 215 — *Pouteria velutina* (Elmer) Baehni, var. *typica* H. J. Lam, Baehni, 1942, 381 — *Sideroxylon bulusaniensis* Elmer, *in msc.*

Tertiary nerves rather few, ascending near midrib, subtransverse near margin. Calyx in flower 2—3 mm in diam., in fruit up to 4 mm in diam., pedicels 7—11 mm long. *Fruits* ovoid, 1.3—1.5 by 0.5—0.7 cm.

Type specimen: *Elmer 13130* in PNH.

Distr.: Philippines (Leyte, Palawan and Luzon).

LEYTE. without known loc.: *Wenzel 1788* (BM, NSW), fl. April.

PALAWAN. prov. Palawan, Mt Pulgar: *Elmer 13130* (BM, FI, L, NSW, PNH), fl. April.

LUZON. prov. Sorsogon, Mt Bulusan: *Elmer 15596* (FI, PNH), fl. Nov.

Var. **sarcocarpa** (Merrill) H. J. Lam, 1925, 215 — *Sideroxylon sarcocarpum* Merrill, Phil. J. Sc. 11, 1916, 29 — *Pouteria velutina* (Elmer) Baehni, var. *sarcocarpa* (Merrill) H. J. Lam, Baehni, 1942, 381.

Tertiary nerves rather numerous, perpendicular to the midrib near the latter, for the rest distinctly transverse. Calyx in fruit 0.5 cm in diam. Pedicel 8—12 mm long. *Fruits* globose, 1.2—1.4 cm in diam.

Type specimen: *Ramos 23415* in PNH.

Vern. name: amahit (Luzon).

Distr.: Philippines (Luzon).

LUZON. prov. Sorsogon, without known loc.: *Ramos 23415* (BM, L, NSW, PNH, SING), fr. July; ibidem, Mt Bulusan: *Elmer 16109* (FI), fl. May; ibidem: *Elmer 16348* (FI, NSW), fr. June; ibidem: *Sulit 3665* (A, L), fr. Aug., tree 9 m.

95. P. maingayi (Clarke) van Royen, nov. comb. — *Sideroxylon maingayi* Clarke in Hooker f., Fl. Br. Ind. 3, 1882, 536 — *Lucuma maingayi* (Clarke) Dubard, Ann. Mus. col. Mars, 20, 1912, 19; H. J. Lam, 1925, 230; idem, 1927, 478 — *Pouteria maingayi* (Clarke) Baehni, 1942, 343 — *Planchonella borneense* (Burck) Pierre, Not. bot. Sapot., 1890, 35 — *Sideroxylon borneense* Burck, Ann. Jard. bot. Bzg 5, 1886, 15.

Trees 10—38 m. Branchlets angular, 2—5 mm in diam., ferruginously puberulous, glabrescent. *Leaves* scattered, obovate, 2.5—7 by 6—25 cm, apex obtusely acuminate, acumen 2—12 mm long, base cuneate, decurrent; with a light coloured intramarginal nerve; subcoriaceous or membranous, ferruginously puberulous on either side, glabrescent and nitidous above, dull below; midrib flat or subimpressed above, prominent below, secondary nerves 6—11, curved, ascending at an angle of 50°—60°, diminishing until inconspicuous, tertiary nervation transverse, prominent above, prominulous below; petioles 0.6—2.5(—4) cm long, ferruginously tomentose, glabrescent, flat, above, angular below. *Flowers* ♀ or ⚥, in few-flowered clusters; pedicels angular, 2—4 mm long, ferruginously sericeous. *Sepals* triangular or orbicular, often unequal, 1.5—2 by 1.5—2.5 mm, apex obtuse, ferruginously sericeous without, glabrous within, inner sepals with membranous margins. *Corolla* almost not exsert, 1.5—2.5 mm long, lobes orbicular, c. 1 by 1 mm, apex truncate. *Stamens* c. 1 mm long, inserted in the middle, when reduced inserted in the basal fourth, anthers ovoid, c. 0.3 mm long, apex acute, dehiscing laterally. *Staminodes* lanceolate, c. 1 mm long, apex subulate. *Ovary* ovoid, c. 1 by 1 mm, truncate at apex, 5-lobed, densely ferruginously hirsute; style cylindrical, c. 1 mm long, apex truncate, with 5 distinct stigmas. *Fruits* ovoid or ellipsoid, 2.5—3 by 2—3 cm, 5-seeded, apex obtuse, glabrous, pericarp thick, fleshy; seeds ovoid, laterally flattened, c. 1.5 by 0.8 by 0.5 cm, obtuse or subacute at either end, blackish or brownish, nitidous, scar linear, white, dull, albumen copious, cotyledons foliaceous, radicle subulate, 2—3 mm long, acute.

Type specimen: *Maingay 993* in K.

Vern. names: *Malay Peninsula,* naka naka, nangka nangka, nyatoh, tak tau, pudu, jenis nyatoh; *Sumatra,* njatuh bungo tandjong, majang rata, gamai, kanduk kambing, kapok rapa; *Borneo,* liwang.

Distr.: Malay Peninsula, Sumatra, Borneo.

MALAY PENINSULA. Selangor, Rawang: *Ngah 32308* (KEP), tree 16 m; Ulu, Sungei Bachang: *Symington 43254* (KEP), fr. Jan. — Kelantan, Sungei Asahan: *Hassan 33352* (KEP) — Kedah, Peranginan For. Res.: *Awang 42406* (KEP), tree 20 m — Pahang, S. Bera near Tasek Bera: *Henderson 24115* (SING), fr. Oct. — Johore, Pengkalan Raja, Pontian: *Ngadiman SF 36646* (SING), fr. June; ibidem, in peat forest: *Ngadiman SF 36679* (SING), fr. July; Kangka Sedili Ketchil: *Corner 28624* (K, SING), fr. green, June — Negri Sembilan, Gunong Augsi: *Ridley 10084* (SING), fr. green, Dec. — Trengganu, Kemaman, Bukit Gemoh Kijol, Pematang Bukit: *Nur 44165* (KEP), tree 20 m — Perak, Sungei Durian, Kuala Selangor: *Shaad 69010* (KEP), tree 25 m, fl. buds Oct. — Malacca, Sungei Udang: *Maingay 993* (K), fl. & fr.; ibidem: *Derry 420* (SING) — Singapore, Bukit Timah Reserve: *Liew SF 36465* (KEP, SING); ibidem: *Liew SF 36466* (SING), fl. June; ibidem:

Ngadiman SF 36439 (KEP, SING), fl. June; ibidem: *Ngadiman SF 36445* (SING), fl. June; ibidem: *Corner 34610* (SING), fr. green Dec.; ibidem: *Corner 34527* (SING), fr. Nov.; Singapore Botanical Garden: *Mat s.n.* (SING), fr. Dec.; ibidem: *Ridley s.n.* (SING), fr. Dec., globose, green; ibidem: *Ridley 8928* (SING), fl.; ibidem: *Ridley 9223* (SING).

SUMATRA. Central Sumatra, Pajakumbuh, northern slope of Mt Sago, alt. 200—1200 m, mountain forest: *Meyer 3710* (L), tree c. 10 m, July — Southeast Coast, Painam, Duku: *NIFS bb 3125* (SING); Tapianuli, Padang Lawas, Batang Baruhar, alt. c. 280 m: *NIFS bb 5235* (SING); Huta Pandang, near Continental Plantation Company, Asahan, in primary forest on red soil: *Krukoff 4279* (L, SING), tree c. 30 m., fr. Nov.; ibidem: *Krukoff 4445* (L), fl. Nov.; Toba altiplain, Pamur Batu: *NIFS bb 6423* (SING); Bandar Pulau: *Yates 2582* (BO), fl. July.

BORNEO. Horyup: *Winkler 2410* (K), fl. June; near Kuching: *Haviland 2321* (BM), fl. white, March; Mt Kinabalu, Bungal, jungle margin, alt. c. 900 m: *Clemens & Clemens 56300* (BM, L), medium tree, fr. green, Jan.; between Kundusan and Tenompoh, bridle tail, alt. 1300—1600 m: *Clemens & Clemens 51202* (L), tree c. 25 m, fr. green, Dec.; without known loc.: *Motley 130* (K), fl.

96. **P. mindanaensis** H. J. Lam, 1925, 207, f. 57; Lam 1927, 473 — *Pouteria mindanaensis* (H. J. Lam) Baehni, 1942, 326.

Trees ? Branchlets stout, terete or angular, 3—6 mm in diam., glabrous (according to Baehni puberulous tomentose and soon glabrous). *Leaves* scattered, obovate-oblong, 7—25 by 3.5—12 cm, apex acute or subrotundate, sometimes short obtusely acuminate, acumen 3—7 mm long, base attenuate, decurrent; with a distinct intramarginal nerve; coriaceous, juvenile leaves appressedly pubescent on either side, ultimately glabrous and nitidous above, dull below; midrib flat above, prominent below, secondary nerves 13—21, ascending at an angle of 50°—65°, straight and curved near margin only, archingly joined, prominulous above, prominent below, tertiary nervation in general transverse, markedly sinuous, sometimes laxly reticulate near margin or sometimes transverse in basal part only and reticulate in apical part, recurved near midrib, often one nerve between two secondary nerves more distinct and subparallel to the latter and starting from the midrib but never reaching the margin; petioles 1.5—4 cm long, flat above, glabrous. *Flowers* clustered, ♀, ♂ and ⚥ (?); pedicels 0.5—1.2 long, yellowish appressedly pubescent. *Sepals* broadly ovate or rotundate, 3—5 by 2.5—4 mm, yellowish sericeous without, glabrous within, inner sepals fimbriate along margin. *Corolla* glabrous, lobes rotundate, as long as tube. *Stamens* unknown. *Staminodes* lanceolate, half as long as lobes. *Ovary* conoid, 5-celled, pubescent; style stout, conoid. *Fruits* black, ovoid, 1—2 by 0.8—1.5 cm, 1—4-seeded, sometimes with a short remnant of the style, glabrous, pericarp membranous, fleshy; seeds fusiform, laterally compressed, c. 1.5 by 0.6 by 0.3 cm, obtuse at either end, nitidous, blackish brown, testa thin, scar linear, as long as seed, c. 1.5 mm wide, albumen copious, cotyledons foliaceous, radicle cylindrical, c. 2 mm long, exsert.

Type specimen: *Clemens 1126* in PNH.

Distr.: Philippines (Mindanao).

MINDANAO. Lake Lamao: *Clemens 1126* (BO, G, K, L, PNH), fl. & fr.

Group 7.

97. **P. baueri** (Mont.) Dubard, 1912, 53; Guillaumin, Bull. Soc. bot. Fr. 89, 1942, 224 — *Sapota baueri* Montrouzier, Mém. Acad. Lyon 10, 1860,

229 — *Planchonella baueri* Dubard, Däniker in Vierteljahrsschr. Nat. Ges. Zürich 78, 1933, 352 — *Pouteria baueri* (Mont.) Baehni, 1942, 329 — *Lucuma baladensis* Baillon, Bull. Soc. linn. Paris 2, 112, 1890, 896 — *Sersalisia baladensis* Baillon ex Dubard, 1912, 53 — *Planchonella baladensis* Pierre, *in msc* — *Fig. 47, 48.*

Shrubs or trees, 1.5—3 m. Branchlets subterete, 1—3 mm in diam., striate, glabrous but sparsely ferruginously puberulous or sericeous at the top, glabrescent. *Leaves* obovate or oblanceolate, (4—)12—18 by 2—5 cm, apex obtuse or short obtusely acuminate, gradually or abruptly tapering into petiole; margins involute, with a narrow intramarginal nerve; membranous or coriaceous, glabrous on either side or brownish tomentose and then sometimes glabrescent on either side, but mostly above only and then greyish nitidous, secondary nerves (5—)7—12, ascending at an angle of 35°—55°(—60°—90°), straight or sometimes slightly curved, often branched at apex and irregularly archingly joined, sometimes diminishing until inconspicuous near margin, tertiary nervations absent above, rarely distinct and then with a few transverse nerves, prominulous below, sometimes the reticulate nervation forming a more distinct nerve subparallel to secondary nerves and visible above as a narrow impressed nerve; petioles slender, 4—22 mm long, flat or subconcave above, slightly rounded or keeled below, widened at base and tuberculate or wrinkled there, glabrous or sparsely appressedly ferruginously tomentose at base in the juvenile leaves. *Flowers* solitary or in few-flowered clusters; pedicels subterete, (0.5—0.8—)1.5—4 cm, apex thickened, striate, glabrous or with a few scattered hairs. Outer *sepals* triangular, 2.5—3 by 1—1.5 mm, apex subacute, ferruginously sericeous on either side, inner sepals ovate, 2.5—3 by 1—1.5 mm, apex obtuse or emarginate, ferruginously tomentose on either side. *Corolla* 3—4 mm long, lobes truncate, subtruncate or rounded, 1.5—2 by c. 1.5 mm. *Stamens* 2—2.5 mm long, inserted in the lower fourth, filaments filiform, 1—1.5 mm, anthers ovoid, c. 1 mm long, dehiscing laterally, apex obtuse, mucronate. *Staminodes* spatulate or oblanceolate, 0.8—1.1 mm, obtuse at apex. *Ovary* obconoid-ovoid, c. 0.5—1 mm, 5-lobed, densely hirsute, with the hairs in bundles; style terete, 3—4 mm long, glabrous, 5-lobed at the top. *Fruits* not seen, but according to Baehni: ovoid, apiculate, as large as a walnut, one-seeded, purplish.

Type specimen: *Montrouzier 133* in P.

Distr.: New Caledonia.

Remarks: Contrary to Baehni's statement the type specimen is *Montrouzier 133* and not *Montrouzier s.n.*

Var. **baueri** — *Fig. 47.*

Angle between secondary nerves and midrib 35°—55°. *Leaves* with indistinct tertiary nervation below, always glabrous. Pedicels 1.5—4 cm long.

Type specimen: *Montrouzier 133* in P.

Distr.: New Caledonia and surrounding islets.

NEW CALEDONIA. Mt Balade: *Vieillard 79* (K, L, P), tree, fl.; without known loc.: *Montrouzier s.n.* (P), fl. March; ibidem: *Deplanche 305* (P), fl.

ILE DES PINS. without known loc.: *Vieillard 80* (L, P), fl.

ILE ART. without known loc.: *Montrouzier 133* (P), fl. March.

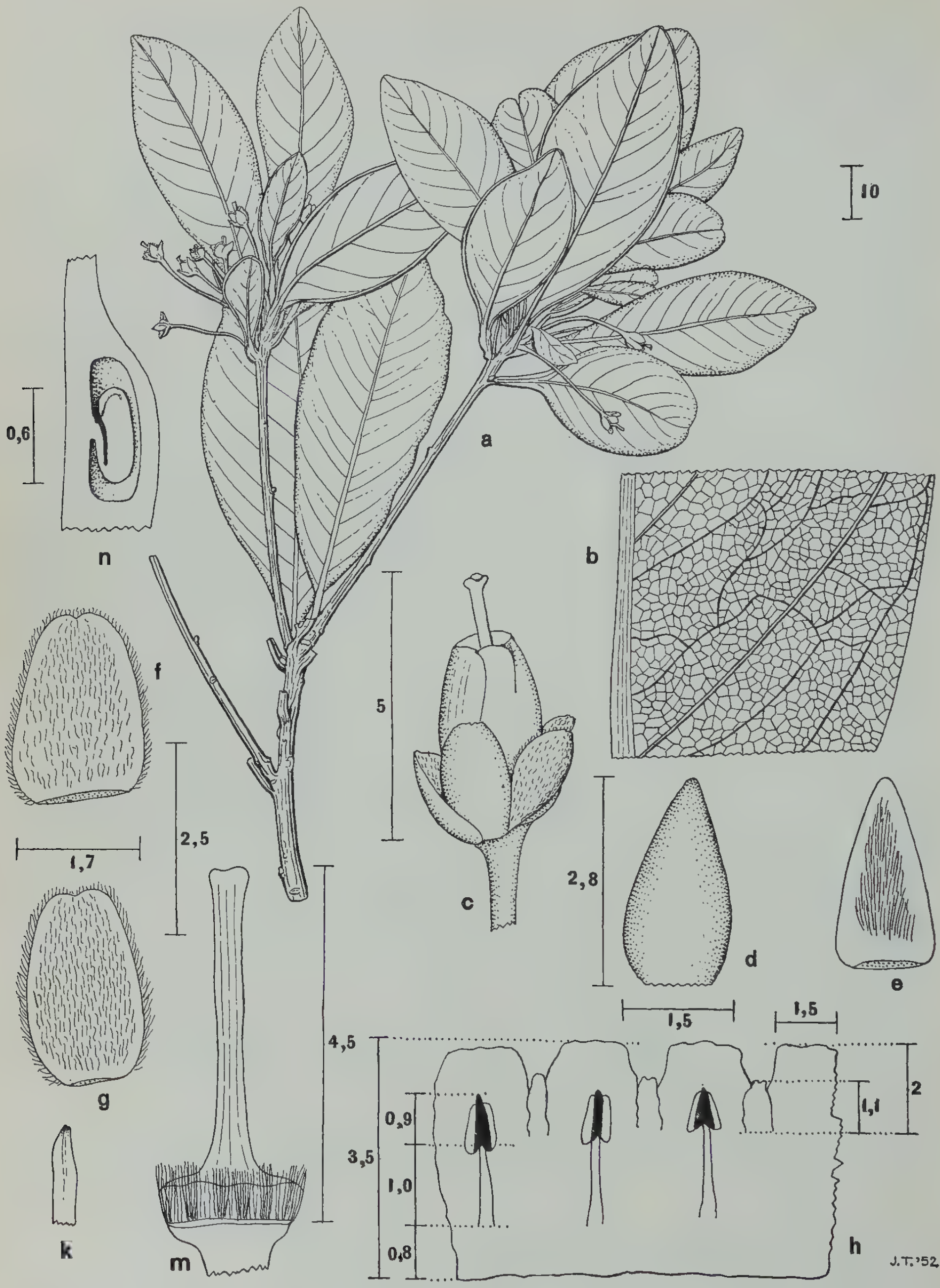

Fig. 47. *P. baueri*, var. *baueri*, a. flowering branch, b. leaf, c. flower, d. outer sepal, outside, e. outer sepal, inside, f. inner sepal, outside, g. inner sepal, inside, h. part of corolla, inside, k. staminode, m. gynaecium, n. longitudinal section of ovary. (*Montrouzier 133*).

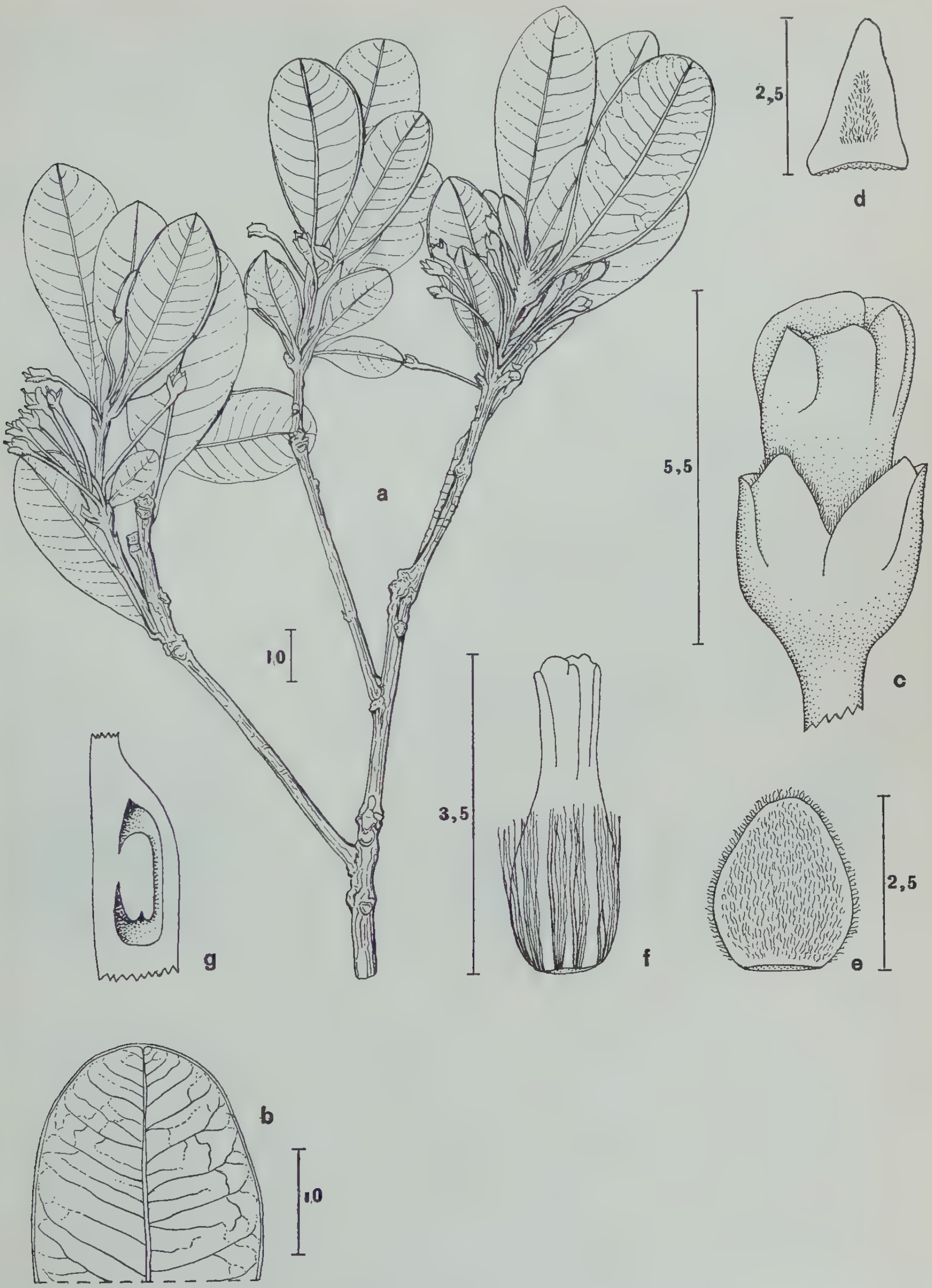

Fig. 48. *P. baueri*, var. *jacquiniaefolia*, a. flowering branch, b. part of leaf enlarged, c. flower, d. outer sepal, inside, e. inner sepal, inside, f. gynaecium, g. longitudinal section of ovary. (*Schlechter 15260*).

Var. **jacquiniaefolia** (Baillon) van Royen, nov. stat. — *Lucuma ? jacquiniaefolia* Baillon, Bull. Soc. linn. Paris 2, 113, 1891, 897 — *Planchonella jacquiniaefolia* (Baillon) Dubard, 1912, 52; Däniker, Vierteljahrsschr. Nat. Ges. Zürich 78, 1933, 353 — *Sideroxylon sp.* Baehni, 1942, 426 — *Fig. 48.*

Angle between secondary nerves and midrib 60°—90°. *Leaves* with distinctly prominent tertiary nervation below, always glabrous. Pedicels 1.5—4 cm long.

Type specimen: *Balansa 452* in P.

Distr.: New Caledonia.

New Caledonia. Prony, forest along bay: *Balansa 452* (L, P), shrub 2—3 m, fl. Sept.; ibidem, lateritic soil, on shrubby plateau: *Franc 1747* (Z), fl. March, shrub; Yaté, rocky coasts of the littoral: *Franc 2063* (Z), shrub 2—3 m, fl. Oct.; ibidem, without known loc.: *Franc 1728* (L, P), fl. March; Ngoye, alt. 1000 m: *Schlechter 15260* (L), fl. Nov.; Plaine des Lacs near Madeleine river, serpentine soil, small forest: *Däniker 320 & 320a* (Z); in valley of brook running from Mt Humboldt towards Kalouéhola, serpentine soil: *Däniker 463* (Z), shrub, fl. Nov.; Mt Madeleine, serpentine soil: *Guillaumin & Baumann 11789* (Z), shrub 2 m, fl. March.

Var. **brevipedicellata** van Royen, nov. var. — *Pag. 434.*

Angle between secondary nerves and midrib 50°—65°. *Leaves* with rather indistinct tertiary nervation below, brownish tomentose on either side and sometimes glabrescent above only. Pedicels 0.5—0.8 cm long.

Type specimen: *Baumann 13788* in Z.

Distr.: New Caledonia.

New Caledonia. SW of Pic N'ga: *Baumann 13788* (Z), fr. March; ibidem, in forest on SW slope: *Baumann 13780* (Z), fl. March; ibidem, along creek on NE slope: *Baumann 13846* (Z); ibidem, in forest along creek on S slope: *Baumann 13695* (Z), shrub 2 m; ibidem, in forest on S slope: *Baumann 13672* (Z), shrub 3 m.

Remarks: The specific epithet has been derived from the short pedicels.

98. **P. ? balansana** (Pierre) Pierre ex Dubard, 1912, 46, *sphalm. 'balanseana'*; Guillaumin, Bull. Soc. bot. Fr. 89, 1942, 224, *sphalm. 'balanseana'*; Guillaumin, Bull. Mus. Hist. nat. Paris, sér. 2, 5, 1933, 322, *sphalm. 'balanseana'* — *Sideroxylon balansanum* Pierre ex Baillon, Bull. Soc. linn. Paris 2, 112, 1890, 889, *sphalm. 'balanseanum'* — *Pouteria balanseana* (Pierre) Baehni, 1942, 317, *syn. et descr. p.p., sphalm. 'balanseana'* — *Fig. 49.*

Trees, 6—10 m. Branchlets angular, 1—2 mm in diam., ribbed, ferruginously sericeous. *Leaves* spatulate or lanceolate, 5—9(—21) by 1.5—2(—4.5) cm, apex short obtusely or acutely acuminate, base narrowly cuneate, shortly tapering into petiole; with a narrow indistinct intramarginal nerve; coriaceous, sparsely ferruginously tomentose below and glabrescent, glabrous above; midrib impressed above, minutely crested, prominent below, secondary nerves 25—40, ascending at an angle of 80°—90°, grooved above, impressed below, diminishing until inconspicuous near the margin, tertiary nervation invisible above, inconspicuous below; petioles 5—7(—50) mm, flat above and with 2 crests, ferruginously puberulous. *Flowers* greenish red, solitary or in few-flowered clusters; pedicels 3—7 mm long, densely appressedly ferruginously tomentose. *Sepals* 5, outer ones ovate-triangular, 2—2.5 by 1.5—2 mm, densely appressedly ferruginously tomentose on either side, inner ones elliptic-ovate, densely ferruginously woolly along the margins, otherwise ferruginously sericeous on either side. *Corolla, stamens* and *staminodes* not seen. *Ovary* 5-celled, densely ferruginously hispidulous; style 5-sided, 1.5—2 mm long. *Fruits* unknown.

Lectotype specimen: *Balansa 1327 A* in P.

Vern. name: messup (Lifu).

Distr.: New Caledonia and surrounding islets.

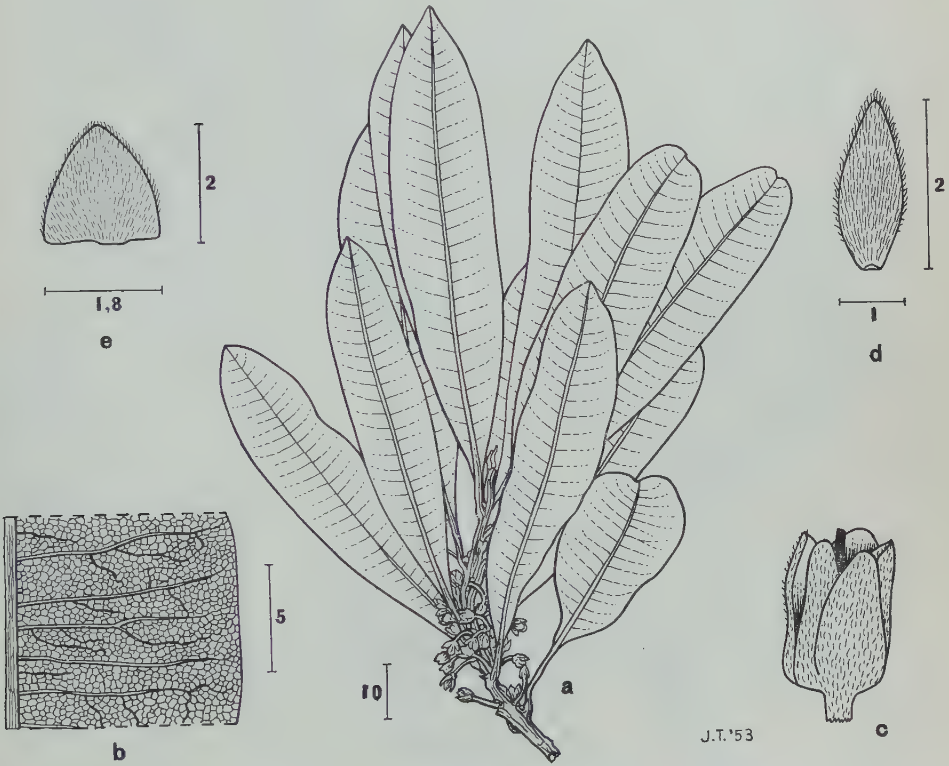

Fig. 49. *P. balansana,* a. habit, b. part of leaf, c. calyx, d. outer sepal, outside, e. inner sepal, outside. (*Franc 1729*).

New Caledonia. Mt Mi: *Balansa 1327 A* (P), fl.; Prony: *Franc 1681 A* (L, P), fl.; near Blanche river: *Baumann 14126* (Z), June; ibidem: *Baumann 14260* (Z), June. Ile des Pins. Pait: *Vieillard & Pancher s.n., ex litt.*

Remarks: As no type specimen has been indicated neither by Pierre nor Dubard, *Balansa 1327 A* is chosen as such.

In *Baumann 14126* and *14260* which are otherwise sterile specimens, the leaves reach a size of up to 21 by 4.5 cm. The petioles attain a length of 5 cm and are provided with two minute crests above.

Baehni, 1942, unfortunately united *Lucuma ? balansana* Pierre and *Sideroxylon balansanum* Pierre to one species *Pouteria balansana.* However, the two species are clearly marked, the one being a *Pouteria,* the other a *Planchonella,* as the embryo of the former has thick cotyledons and almost no endosperm.

99. **P. ? crebrifolia** (Baillon) Pierre ex Dubard, 1912, 53 — *Lucuma crebrifolia* Baillon, Bull. Soc. linn. Paris 2, 113, 1891, 898 — *Sideroxylon crebrifolium* (Baillon) Engler, EP Pfanzenfam., Nachtr. 1, 1897, 277; Baehni, 1942, 426 — *Fig. 50.*

Shrubs. Branchlets terete, 1—3 mm in diam., greyish puberulous, glabrescent. *Leaves* spatulate, 1—3 by 0.3—1 cm, apex obtuse, base attenuate; with a narrow intramarginal nerve; coriaceous, greyish tomentose above mainly along midrib, greyish or ferruginously tomentose below, glabrescent except in basal part and along midrib, nitidous above, dull below; midrib prominulous above, prominent below, secondary nerves inconspicuous, 10—15, ascending at an angle of c. 55°, straight, subimpressed above, almost invisible below, tertiary nervation inconspicuous on either side; petioles 0.5—2 mm long, flat above and with 2 longitudinal ribs, ferruginously puberulous or sericeous. *Flowers* solitary or 2 in each axil; pedicels angular, 2—7 mm long, ferruginously tomentose. *Sepals* ovate or elliptic, 1.8—2.5 by c. 1.5 mm, apex obtuse, ferruginously tomentose on either side, fimbriate along margin. *Corolla* c. 3 mm long, lobes quadrangular, c. 1.5 by c. 1 mm, apex truncate. *Stamens* 1—1.5 mm long, inserted slightly below the middle, filaments subulate, c. 1 mm long, anthers ovoid, 0.5—0.7 mm, apex mucronulate, dehiscing laterally. *Staminodes* spatulate or oblong, c. 0.8 mm long, apex truncate, obtuse or irregularly dentate. *Ovary* ellipsoid-ovoid, 1—1.5 by c. 1 cm, densely ferruginously hirsute; style cylindrical, 1.8—2.5 mm long, terete or slightly 5-ribbed, with 5 stigmas at apex. Juvenile *fruit* obovoid, 4—7 by 2—3 mm, glabrous except for a ring of hirsute hairs at base of style. Seeds unknown.

Type specimen: *Balansa 3154* in P.

Distr.: New Caledonia.

New Caledonia. Kanala: *Vieillard 2906* (K), fl.; Prony, laterite rocks: *Franc 1721* (SING), shrub, fl. March; South Bay, between N'Go Bay and Touaourou: *Rohrdorf 186* (Z), juv. fr., Sept.; between Kanala and Gouaoua: *Balansa 3154* (P), shrub fl.

Doubtful species

1. **P. ? boninensis** (Nakai) Masamuna & Yanagihara, Trans. Nat. Hist. Soc. Formosa 31, 1941, 322 — *Palaquium boninense* Nakai, Rigakkwai 26, 1928, 11, *nomen* — *Sideroxylon boninense* (Nakai) Nakai, The Bot. Mag. 43, 1929, 444, *descr.*; Nakai, Bull. Biogeogr. Soc. Japan 1, 3, 1930, 261.

Description given by Nakai, 1929:

Arborea usque 4—5 m alta. Cortex trunci atro-cinereus irregulariter fissus. Rami triennes sordide cinereus teres cicatrice foliorum rotundorum 4—5 diamentientium sparsim notati, biennes cinerascentes, hornotini obtuso-angulato-sulcati pilis brevibus ferrugineis vestiti. Folia biennia; petioli 2—3.5 cm, longi apice in lamina sensim alato-contigui glaberrimi vel dorso pilis minutis sparsim vestiti, supra leviter sulcati, infra teretes; lamina oblanceolato-oblonga viridia chartacea supra luciduscula integerrima subrevoluta, foliorum ramorum juvenilium 11—17.5 cm longa, 5—9.5 cm lata

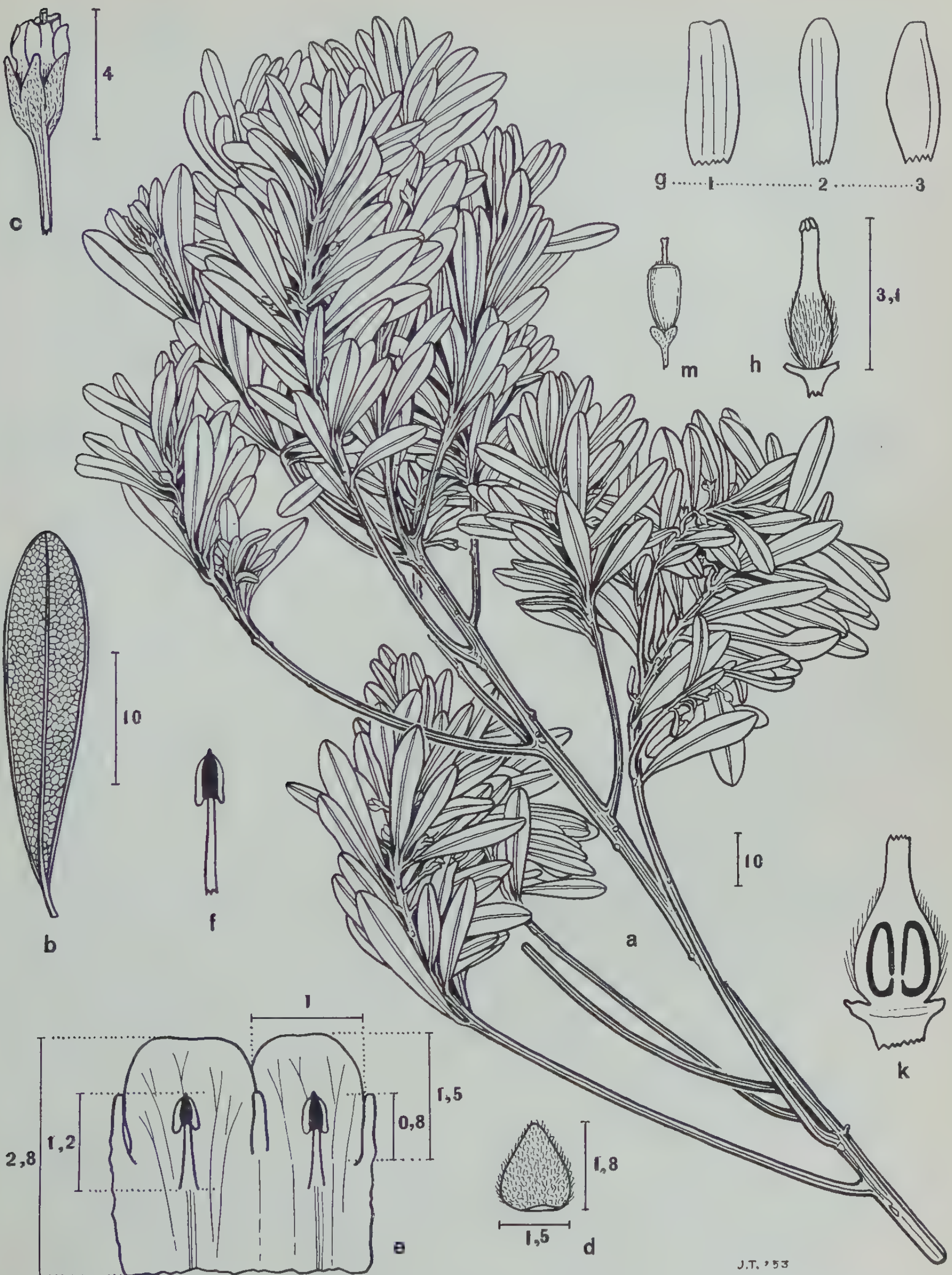

Fig. 50. *P. crebrifolia,* a. habit, b. leaf, c. flower, d. outer sepal, outside, e. part of corolla, inside, f. stamen, g. staminodes, h. gynaecium, k. longitudinal section of gynaecium, m. juvenile fruit. (m. from *Rohrdorf 186,* the rest from *Franc 1721*).

apice rotundata vel sensim angustato-obtusa venis primariis utrinque 6—8, foliorum ramorum floriferum 6.5—10.3 cm longa, 2.5—4.5 cm lata. Flores ex axillis foliorum annotinorum evoluti cernui in quaque axilla 1—3; pedicelli 5 mm longi ferrugineo-pilosi; sepala 5 imbricata 2 mm longa; corolla 3 mm longa tubo breve, lobi 5 subtriangulares tubo aequilongi apice acutiuscula; staminodia 5 lobis corollae alterna lineari-lanceolata; stamina 5 fauce corollae affixa et lobes opposite, filamenta lanceolata 0.5 mm longa, antherae sagittatae 0.5 mm longae flavidae loculis duobus laterali longitudine dehiscentibus, connectivum haud productum; ovarium 5-loculare depressum ferrugineo-pilosum subquinquelobum; styli breves circ. 0.5 mm longi albi columnales 5-angulares; stigma punctatum. Fructus carnosus 5 cm longus, 4 cm latus flavidus astringens cum pedicello robusto 1 cm longo suffuctus. Semina elongata castanea lucida laterali compressa 2.5 cm longa albuminosa.

Type specimen: *Toyoshima s.n.* in TI.

Use: The ripe fruits are eaten by pigeons, though they are astringent.

Distr.: Bonin Islands.

BONIN ISLANDS. Mukôjima, near Hahajima: *Toyoshima s.n.* (TI), fl. & fr. — Keitajima, near Mukojima: *Tsuruda & Akaji s.n.* (TI), fl.

Remarks: According to the description this species represents a *Planchonella* but though I traced the material it was impossible to obtain the specimens from the Tokyo Imperial University.

2. **P. ? calcarea** (Hosokawa) van Royen, nov. comb. — *Sideroxylon calcareum* Hosokawa, Trans. Nat. Hist. Formosa 32, no. 220, 1942, 17.

Description given by Hosokawa:

Proxime affine *S. micronesicum* (Kusaie). Arbor, ramis et ramulis teretibus glabris cortice fusco-brunneo praeditis. Folia petiolata, petiolis ad 3.7 cm longis, glaberrima, oblongo-elliptica, apice breviter obtuso-acuminata vel obtusa, basi cuneata, margine integra, nitidula, coriaceo-chartacea, conspicue reticulata, nervis lateralibus prominentibus circ. 14—17 angulo circ. 70°—75° a costa patentibus versus marginem paullo arcuatim adscendentibus, lamina ad 20 cm longa 6.2 cm lata. Flores ignoti. Fructus oblongus, rubro-niger, glaber, in siccitate ca. 2 cm longus 1.3—1.5 cm altus. Pedicellus ad axillas foliorum solitarius ca 1 cm longus, adpresse brunneo-pubescens. Semina 1 vel rarissime 2 in quoque fructo, ellipsoidea, 1.9 cm longa 1 cm lata, testa brunnea nitidissima, hilo lineari 1.7 cm longo.

Type specimen: *Hosokawa 9790* in Taihoku Imp. Univ.

Vern. name: udâl.

Distr.: Palau Islands.

PALAU ISLANDS. Oropsyakal, rare in primary forest on the coral rocks: *Hosokawa 9790*, fr.

Remarks: Though I tried to trace the material I did not succeed in finding it. According to a letter from Prof. Hosokawa to Prof. Lam this species might probably represent a *Planchonella*.

3. **P. ? oxyedra** (Miquel) Dubard, 1912, 50, *p.p.*; H. J. Lam, Blumea 5, 1, 1942, 13, *p.p.* — *Sideroxylon ? oxyedrum* Miquel, Fl. Ind. Bat., Suppl., 1860, 580; Burck, Ann. Jard. bot. Bzg 5, 1886, 20 — *Pouteria oxyedra* (Miq.) Baehni, 1942, 315, *p.p.*

Description given by Miquel, 1860:

Innovationes rufule sericeo-villosulae; ramuli mox glabri superne trigoni faciebus planis; folia sparsa longiuscule petiolata, e basi attenuata elliptico-lanceolata longe acuminata, in sicco margine undulata, firmiter pergamacea, glabra, subtus nitore metallico subaurato-grisea, costulis patulis ante marginem arcuatis tenuibus utrinque 19—15 pertensa, usque 9-pollicaria; gemmae axillares (floriferae ?) ovoideae parvae squamellosae rufo-ochraceo-tomentellae; flores ......

Type specimen: *Teysmann 3672* in BO.

Distr.: Sumatra.

Sumatra near Muara Enim: *Teysmann 3672* (BO, L).

Remarks: The doubtful status of this species is discussed in *Planchonella linggensis* (Burck) Pierre. See pag. 385.

4. P. ? wallichianum (G. Don) van Royen, nov. comb. — *Sideroxylon ? rugosum* Wallich, Cat., 1828, 4158, *nomen nudum* — *Sideroxylon wallichianum* G. Don, Gen. Hist. Dichlam. Pl. 4, 1838, 28, *descr.* — *Planchonella ? rugosa* H. J. Lam, 1925, 216; H. J. Lam, 1927, 416.

Description given by Don, 1838:

Branches, petioles, and midrib of leaves clothed with rusty villi while young, leaves large, elliptic-oblong, or oblong-obovate, acuminate, on short petioles, crowded at the tops of the branches.

Type specimen: *Wallich 4158* in ?

Vern. name: ironwood.

Distr.: Malay Peninsula (Penang).

Remarks: As I have been unable to trace the material the description given by Don is presented here as the single reference to this species.

Type specimens of synonyms

Achras costata Pancher & Siebert: not indicated = P. microphylla Pierre.
Beccariella coriacea Pierre: Balansa 1322 in P = P. dubia (P. & S.) van Royen.
Chrysophyllum curtisii King & Gamble: Curtis 1072 in SING = P. linggensis (Burck) Pierre.
Lucuma baladensis Baillon: Vieillard 79 in P = P. baueri (Mont.) Dubard.
L. ? discolor Baillon: Balansa 1828 = P. linggensis (Burck) Pierre.
Planchonella fragrans (Elmer) H. J. Lam: Elmer 12190 in PNH = P. firma (Miq.) Dubard.
P. glabra (Ridley) H. J. Lam: Ridley 15770 in SING = P. obovata (R. Br.) Pierre.
P. howeana (F. v. M.) Pierre: von Mueller 8549 in MEL = P. myrsinoides (Cunn.) Blake.
P. samoensis H. J. Lam: Reinecke 177 in B = torricellensis (Sch.) H. J. Lam.
P. viridis Pierre: Balansa 1828 in P = P. linggensis (Burck) Pierre.
Pouteria duclitan (Blanco) Baehni: not indicated = P. nitida (Bl.) Dubard.
Sersalisia brachyloba Domin: not indicated = P. brownlessiana (F. v. M.) van Royen.
Sideroxylon albocostatum Krause: Ledermann 9845 in B = P. linggensis (Burck) Pierre.
S. auahiense Rock: Rock 8668 in BISH = P. sandwicensis (Gray) Pierre.
S. bulusanensis Elmer: Elmer 15596 in PNH = P. velutina (Elmer) H. J. Lam.
S. ceresolei Rock: Rock 10150 in BISH = P. sandwicensis (Gray) Pierre.
S. dubium Koidzumi: not indicated = P. obovata (R. Br.) Pierre.
S. dugulla Bailey: Cowley s.n. in K = P. pohlmaniana (F. v. M.) Pierre.
S. ferrugineum H. & A.: not indicated = P. obovata (R. Br.) Pierre.
S. fragrans Elmer: Elmer 12190 in PNH = P. firma (Miq.) Dubard.

S. gitingense Elmer: Elmer 12332 in PNH = P. firma (Miq.) Dubard.
S. glabrum Ridley: Ridley 15770 in SING = P. obovata (R. Br.) Pierre.
S. lasiocladum Baillon: Pancher 253 in P = P. sebertii (Pancher) Dubard.
S. littorale Ridley: Burkill 876 in SING = P. linggensis (Burck) Pierre.
S. liukiuense Nakai: Tanaka s.n. in FU ? = P. obovata (R. Br.) Pierre.
S. neo-caledonicum (Dubard) Baehni: Petit 130 in P = P. novo-caledonica Dubard.
S. pittosporifolium Elmer: Elmer 12552 in PNH = P. linggensis (Burck) Pierre.
S. portus-darwinii Schwarz: Bleeser 297 in B = P. arnhemica (F. v. M.) van Royen.

Excluded species

1. *P. annamensis* Pierre = Pouteria annamensis (Pierre) Baehni, 1942, 311.

Type specimen: *Bon 2171* in P.

Distr.: Indochina.

2. *P. assamica* (Clarke) Pierre (and *P. assamica* (Clarke) Fletcher) = Xantolis assamica (Clarke) van Royen, Blumea VIII, 2, 1957, 230.

Type specimen: *Masters s.n.* in K.

Distr.: Assam.

3. *P. aurata* Pierre = Eberhardtia aurata (Pierre) Lec., Bull. Mus. Hist. nat. Paris 26, 1920, 348.

Type specimen: *Balansa 4338* in P.

Distr.: Indochina.

4. *P. ? avenia* (Burck) H. J. Lam, 1925, 199 — *Sideroxylon avenium* Burck, Ann. Jard. Bot. Bzg 5, 1886, 16 — *Lucuma avenia* (Burck) H. J. Lam, 1927, 476, 478.

Type specimen: *Teysmann s.n.* in BO.

Distr.: Banka.

Remarks: The type specimen shows numerous roundish glands in its leaves and is Theaceous, *Ternstroemia sp.* Also its fruits, by the presence of two bracteoles under the calyx points to that genus. The other specimens mentioned by Lam, 1927, must be regarded as non-Sapotaceous as well as the leaves are arranged in whorls or are opposite but moreover are provided with numerous roundish glands. Probably these specimens are also Theaceous, and also belong to Ternstroemia. The specimen *NIFS bb 8755* mentioned by Lam must be regarded as belonging to the Myrsinaceae, viz. *Ardisia sp.*

5. *P. beccariana* (Pierre) H. J. Lam = **Palaquium beccarianum** (Pierre) van Royen, nov. comb.

Type specimen: *Beccari 783* in FI.

Distr.: Borneo.

6. *P. boniana* Dubard = Xantolis boniana (Dub.) van Royen, var. boniana, van Royen, Blumea VIII, 2, 1957, 212.

Type specimen: *Bon 2899* in P.

Distr.: Indochina.

7. *P. burmanica* (Coll. & Hemsl.) H. J. Lam = Xantolis burmanica (Coll. & Hemsl.) van Royen, var. burmanica, van Royen, Blumea VIII, 2, 1957, 223.

Type specimen: *Collett 740* in K.

Distr.: Burma and Siam.

8. *P. cambodiana* Pierre = Xantolis cambodiana (Pierre) van Royen, var. cambodiana, van Royen, Blumea VIII, 2, 1957, 228, f. 8.
Type specimen: *Pierre 921* in P.
Distr.: Indochina and Siam.

9. *P. cochinchinensis* Pierre ex Dubard = *P. obovata* (R. Br.) Pierre.
Type specimen: *Pierre 454* in P.
Distr.: Cochinchina.

10. *P. crassinervia* Dubard = Pouteria pancheri (Baill.) Baehni, 1942, 308.
Type specimen: *Balansa 1829* in P.
Distr.: New Caledonia.

11. *P. dongnaiensis* Pierre = Xantolis tomentosa (Roxb.) Raf., van Royen, Blumea VIII, 2, 1957, 226.
Type specimen: *Pierre 3274* in P.
Distr.: Indochina.

12. *P. endlicheri* (Montr.) Guill. = Pouteria endlicheri (Montr.) Baehni, 1942, 305.
Type specimen: *Montrouzier 137* in P.
Distr.: New Caledonia.

13. *P. erringtonii* Dubard = Pouteria ? erringtonii (Dub.) Baehni, 1942, 416.
Type specimen: *Errington de la Croix 13* in P.
Distr.: Malay Peninsula.

14. *P. forbesii* (Moore) H. J. Lam = Krausella forbesii (Moore) H. J. Lam, Boissiera 7, 1943, 92.
Type specimen: *Forbes 756* in BM.
Distr.: New Guinea.

15. *P. gamblei* (Clarke) H. J. Lam = **Gomphocarpa gamblei** (Clarke) van Royen, nov. comb. (Icacinaeae).
Type specimen: *Gamble 830* in K.
Distr.: Sikkim.

16. *P. grandifolia* (Wall.) Pierre = Pouteria ? grandifolia (Wall.) Baehni, 1942, 332.
Type specimen: *Wallich 4155* in K.
Distr.: Bengal and Burma.

17. *P. hookeri* (Clarke) Pierre = Xantolis hookeri (Clarke) van Royen, Blumea VIII, 2, 1957, 214.
Type specimen: *Hooker 4* in K.
Distr.: Northern parts of India and Laos.

18. *P. intermedia* (Baill.) Däniker = Chrysophyllum intermedium Baillon, Bull. Soc. linn. Paris 2, 113, 1891, 898.
Type specimen: *Balansa 3045* in P.
Distr.: New Caledonia.

19. *P. kerrii* Fletcher = Pouteria ? grandifolia (Wall.) Baehni, 1942, 313.
Type specimen: *Kerr 19372* in K.
Distr.: Siam.

20. *P. laotiana* Dubard = Xantolis boniana (Dubard) van Royen, var. boniana, van Royen, Blumea VIII, 2, 1957, 212.

Type specimen: *Pavie s.n. in P.*
Distr.: Laos.

21. *P. lauterbachiana* H. J. Lam = Pouteria lauterbachiana (H. J. Lam) Baehni, 1942, 314.
Type specimen: *Schlechter 17933* in B.
Distr.: New Guinea.

22. *P. lecardii* (Baill.) Guill. = *Pouteria ? lecardii* (Baill.) Baehni, 1942, 309.
Type specimen: *Lécard s.n.* in P.
Distr.: New Caledonia.

23. *P. lenticellata* Fletcher = Xantolis burmanica (Coll. & Hemsl.) van Royen, var. lenticellata (Fletcher) van Royen, Blumea VIII, 2, 1957, 226, f. 7.
Type specimen: *Kerr 5555* in K.
Distr.: Siam.

24. *P. leptoclada* (Baill) Däniker = Chrysophyllum deplanchei Baillon, Bull. Soc. linn. Paris 2, 1891, 899.
Type specimen: *Deplanche 436* in P.
Distr.: New Caledonia.

25. *P. linguaeformes* Pierre = Pouteria ? longipes (Baill.) Baehni, 1942, 330.
Type specimen: *Balansa 1824* in P.
Distr.: New Caledonia.

26. *P. lissophylla* (Pierre) Däniker = Chrysophyllum lissophyllum Pierre ex Baillon, Bull. Soc. linn. Paris 2, 113, 1891, 903.
Type specimen: *Franc 1938* in P.
Distr.: New Caledonia.

27. *P. maritima* Pierre = Xantolis maritima (Pierre) van Royen, Blumea VIII, 2, 1957, 222.
Type specimen: *Pierre 3276* in P.
Distr.: Indochina.

28. *P. papuanica* (Pierre) Dubard = **Chrysophyllum papuanicum** (Pierre) van Royen, nov. comb.
Type specimen: *Beccari 350* in P.
Distr.: New Guinea.

29. *P. parvifolia* (A. DC) Pierre = Xantolis parvifolia (A. DC) van Royen, Blumea VIII, 2, 1957, 221.
Type specimen: *Cuming 1147* in G.-Boiss.
Distr.: Philippine Islands.

30. *P. pavieana* Pierre = Xantolis boniana (Dubard) van Royen, var. pavieana (Pierre) van Royen, Blumea VIII, 2, 1957, 213.
Type specimen: *Pavie s.n.* in P.
Distr.: Indochina.

31. *P. petaloides* H. J. Lam = Pouteria petaloides (H. J. Lam) Baehni, 1942, 328.
Type specimen: *Teysmann 1879* in BO.
Distr.: Ambon, Sula, Luzon.

32. *P. petitiana* (Pierre) Pierre = Pouteria endlicheri (Montr.) Baehni, 1942, 305.

Type specimen: *Petit 19* in P.
Distr.: New Caledonia.

33. *P. pierreana* Dubard = **Palaquium beccarianum** (Pierre) van Royen, nov. comb.
Type specimen: *Teysmann 4197* in P.
Distr.: Borneo.

34. *P. pomifera* (Pierre) Dubard = Pouteria maclayana (F. v. M.) Baehni 1942, 307.
Type specimen: *Beccari 533* in P.
Distr.: New Guinea.

35. *P. puberula* (A. DC) H. J. Lam = Sideroxylon puberulum A. DC, Baehni, 1942, 218.
Type specimen: *"Herbier Ventenat" s.n.* in G.
Distr.: Mauritius.
Remarks: The type specimen does not bear any indication except that it is included in the Ventenat herbarium. The latter probably removed the original label, a habit which seems to have been characteristic for Ventenat.

36. *P. racemosa* Dubard = Xantolis racemosa (Dubard) van Royen, Blumea VIII, 2, 1957, 216, f. 4.
Type specimen: *Bon 5220* in P.
Distr.: Indochina.

37. *P. rostrata* (Merrill) H. J. Lam = Xantolis boniana (Dubard) van Royen, var. rostrata (Merrill) van Royen, Blumea VIII, 2, 1957, 213.
Type specimen: *MacClure 8559* in PNH.
Distr.: Hainan.

38. *P. sericea* (Ait.) Dubard = Pouteria sericea (Ait.) Baehni, 1942, 375.
Type specimen: *von Mueller s.n.* in BRI.
Distr.: Australia.

39. *P. sessiliflora* White = **Pouteria solomonensis** van Royen, nov. comb.
Type specimen: *Walker BSIP 237* in BRI.
Distr.: Solomons.

40. *P. siamensis* Fletcher = Xantolis siamensis (Fletcher) van Royen, Blumea VIII, 2, 1957, 220, f. 6.
Type specimen: *Kerr 10124* in K.
Distr.: Siam.

41. *P. spectabilis* (Pierre) Dubard = Boerlagella spectabilis Pierre, Not. bot. Sapot., (Boerlagellaceae H. J. Lam, 1925, 251.)
Type specimen: *Teysmann s.n.* in P.
Distr.: Sumatra.

42. *P. stenosepala* (Hu) Hu = Xantolis stenosepala (Hu) van Royen, Blumea VIII, 2, 1957, 216, f. 3.
Type specimen: *Wang 75088* in PI.
Distr.: China (Yunnan).

43. *P. tomentosa* (Roxb.) Pierre = Xantolis tomentosa (Roxb.) Raf., van Royen, Blumea VIII, 2, 1957, 226.

Type specimen: *Haines 4849a* in K.

Distr.: India and Burma.

44. *P. wakere* (Panch. & Sebert) Pierre = Pouteria wakere (Panch. & Sebert) Baehni, 1942, 335.

Type specimen: *Pancher & Sebert 25* in P.

Distr.: New Caledonia.

45. *P. punctata* Fletcher = Xantolis burmanica (Coll. & Hemsley) van Royen, var. burmanica, Blumea VIII, 2, 1957, 223.

Type specimen: *Kerr 6392* in K.

Distr.: Siam.

Latin diagnosis of the new taxa

1. **P. rheophytopsis** van Royen — *Cf pag. 270 et fig. 8.*

Arbor ?. Ramuli teretes, albido-sericei vel flavido-sericei. Folia in ramulorum apicibus congesta oblonga-lanceolata, 6—10 cm longa, 0.8—1.1 cm lata, obtusa, integra vel emarginata mucronulata, basi anguste cuneata et obscure decurrentia, marginibus involutis, supra glabra, infra albido-sericea vel flavida sericea, costa supra prominula, apicem versus diminuens infra elevata, nervi secundarii 4—6, ascendentes sub angulo c. 15°, arcuati, nervi tertiarii laxe reticulati sparsi; petiolus 2—5 mm supra depressus, infra albido-sericeus vel glaber. Pedicellus angularis, c. 13 mm, albido-sericeus. Sepala ovata, obtuso-acuminata, acumine obscuro, extus albido-sericea, intus glabra; sepala interiora marginibus membranaceis ferrugineo-fimbriatis. Corolla in alabastro solum a mihi visa, lobis late ovatis, obtusis vel subacutis, marginibus ferrugineo-fimbriatis. Stamina in parte quarta basali affixa, filamentis subulatis, antheris sagittatis, obtusis mucronulatis, thecarum basi obtusa. Staminodia lanceolato-linearia vel petaloidea acuta. Ovarium obovoideum ferrugineo-pilosum. Stylus subulatus. Fructus ignoti.

Typus: *Balansa 3469* in L.

2. **P. cotinifolia** (A. DC) Dubard, var. **pubescens** van Royen — *Cf p. 296.*

Folia adulta subtus flavide lanato-puberula et supra sparse albido-pubescentia. Pedicelli et sepala extus flavide lanati. Ovarium flavido-pilosum. Fructus 1—4-spermus.

Typus: *White 12462* in L.

3. **P. lanatifolia** van Royen. — *Cf pag. 306 et fig. 22.*

Arbor parva. Ramuli gracilis teretes, nigrotomentosi glabrescentes. Folia ad ramulorum apices conferta elliptica, 2—4.5 cm longa, 0.9—2 cm lata, apice rotunda ad mucronata, basi late cuneata ad rotunda, nervo marginali gracili; supra secus nervos canescenti-tomentosa, in pagina inferiori canescenti- ad ferrugineo-tomentosa, costa supra canaliculata, infra prominula et in parte basali minute cristata, nervis secundariis 5—7, sub angulo c. 60° ascendentes arcuati sensim tenuiores et ultime inconspicui, nervi tertiarii transversi inconspicui; petiolus 3—5 mm longus, supra canaliculatus infra canescenti- ad ferrugineo-tomentosus. Pedicellus angularis, 2—5 mm longus, ferrugineo-tomentosus. Pedicellus angularis, 2—5 mm longus, ferrugineo-tomentosus. Sepala exteriora squamiformia, interiora triangularis, obtusa vel retusa obscure cristata, utrimque dense ferrugineo-tomentosa. Corolla pallide flava, lobis orbicularibus truncatis. Stamina in parte tertia inferiori inserta, filamentis subulatis, antheris ovatis, obtusis, thecarum bases obtusae. Staminodia lanceolata obtusa. Ovarium conoideum ferrugineo-strigosis. Stylus teres 5-costatus, interdum laeviter exsertus 5-stigmatosus. Fructus ignoti.

Typus: *Kanehira & Hatusima 13891* in A.

4. **P. azou** van Royen — *Cf pag. 308 et fig. 24.*

Arbor. Ramuli angularis canescenti- vel ferrugineo-tomentosi. Folia ad ramulorum apices conferta vel sparse obovata-oblonga ad elliptico-oblonga, apice acuta vel acute acuminata, basi cuneata, nervo marginali tenui, bullata, novella utrimque ferrugineo-tomentosa, adulta glabra supra nitida interdum canescenti-tomentosa subtus ferrugineo- vel canescenti-tomentosa incomplete glabrescentia. Costa supra sulcata et minute cristata infra prominula, nervi secundarii 22—32, in parte media sub angulo 65°—70° ascendentes, in parte basali sub 85°—90° et sese magis approximati erecti apice subarcuati, sed in foliorum partibus apicalibus curvati; sensim tenuiores et ultime inconspicui, raro arcuatoconjuncti, supra impressa infra prominentes, nervi tertiarii pro maxima parte transversi sed prope costam nervis secundariis subparalleli inconspicui, petiolus 3—12 mm longus, supra sulcatus et longitudinaliter anguste 2-costatus canescenti-tomentosus. Flores flavidus solitarii vel fasciculis paucifloris ♀ vel ⚥, pedicellus angularis 3—6 mm longus puberulo-sericeus, ferrugineus. Sepala exteriora ovata 4—4.5 mm longa, 2.5—3 mm lata, obtusa, extus puberulo-sericeus ferrugineus, intus ferrugineo-sericea; sepala interiora elliptica 3—3.5 mm longa, 1.5—2 mm lata, obtusa extus ferrugineo-sericea, intus sericea. Corolla 4—4.5 mm longa, lobis panduratis 1—1.2 mm longis, 1.4—1.6 mm latis, truncatis vel obtuse acuminatis. Stamina 2—2.2 mm longa paulum infra dimidiam inserta, filamentis subulatis, c. 1.5 mm longis, antheris ovoideis c. 1 mm longis mucronatis lateraliter dehiscentibus; thecarum bases obtusae. Staminodia spathulata ad linearia vel breviter subulata 0.5—1.5 mm longa obtusa vel apice irregulariter serrata. Ovarium ovoideum 1—1.5 mm altum et diametiens ferrugineo-strigosum. Stylus cylindricus 5-costatus 3.5—5 mm longus, stigmate capitato. Fructus ignoti.

Typus: *Le Rat & Le Rat 1424* in P.

5. **P. lucens** van Royen — *Cf pag. 311 et fig. 25.*

Frutex. Ramuli angulares, striati ferrugineo-tomentosi glabrescentes. Folia ad ramulorum apices conferta anguste spathulato-oblonga ad oblanceolata (2—)5—10 cm longa, 1—2.5 cm lata, acuta vel obtuse ad acute acuminata, basi anguste cuneata et subabrupte contracta, decurrentia, nervo marginali tenui; bullata coriacea utrimque glabra sed interdum canescenti- ad ferrugineo-puberula in costae et foliorum partibus basalibus, supra nitidula, subtus nitida, costa utrimque prominula, supra anguste canaliculata et in parte basali tantum canescenti-tomentosa, subtus tomentosa canescenti-flavida vel ferruginea glabrescens, nervi secundarii 13—18, sub angulo 50°—55° (in parte basali sub angulo 90°) ascendentes, curvati sed in parte inferiori erecti, arcuatim conjuncti, supra impressi, subtus prominentes, nervi tertiarii transversi inconspicui et supra impressi, subtus prominuli; petiolus 3—10 mm longus, supra late sulcatus et ferrugineo- vel canescenti-tomentosus. Flores flavidi ad lutei plerumque solitarii bibracteolati, bracteolis 2 triangularibus ferrugineo-puberulis pedicelli basin insertis, pedicellus teres, 5—8 mm longus sericeo-tomentosus canescens ad ferrugineus. Sepala ovata ad triangularia, obtusa extus ferrugineo-tomentosa, intus in parte mediana tantum ferrugineo-sericea. Corolla lobis quadrangularibus, truncatis ad retusis. Stamina in parte tertia inferiori inserta, filamentis subulatis, antheris sagittatis, mucronatis; thecarum bases obtusae; lateraliter dehiscentibus. Staminodia spathulata ad ovata, apice obusa vel irregulariter dentata. Ovarium ovoideo-conoideum, basi ferrugineo-strigosum. Stylus cylindricus robustus, apice 5-lobatus. Fructus ellipsoideo-obovoidei, apice styli rudimenti coronati, ferruginei tomentoso-sericei glabrescentes. Semina oblique fusiformia, basi apiceque obtusa ad subacuta brunnea nitida. Area derasa seminae dimidio sublongior vel eo aequilonga, canescens. Albumen copiosum; cotyledones foliacei; radicula conoidea, obtusa.

Typus: *Le Rat & Le Rat 763* in P.

6. **P. macrocarpa** van Royen — *Cf pag. 321 et fig. 27.*

Arbores. Ramuli breves teretes c. 8 mm diametientes sericei indumento nigro-canescenti vel ferrugineo glabrescentia. Folia alterna ad ramulorum apices subconferta, anguste elliptica, 12—22 × 3.5—6.5 cm, apice obtuse ad inconspicue obtuso-acuminata, basi cuneata, breviter in petiolum decurrentia, nervo marginali gracili munita; coriacea; supra glabra et nitida, subtus opaca et area albido-sericea secus costam posita excepta glabra; costa supra late impressa et minute carinata, subtus conspicue prominens; nervi secundarii 8—12 ascendentes sub angulo 35°—55°, leviter curvati sed praecipue erecti et apice tantum curvati, supra applanata ad impressa, subtus prominentes; nervi tertiarii transversi, supra prominuli, subtus prominentes, reticulatione minuta inter nervos transversos posita alveolas prominentes formantibus; petiolus 3.5—8.5 cm, supra inconspicue et anguste canaliculatus, graciliter ferrugineo- vel raro canescenti-sericeus. Flores ignoti. Fructus ellipsoideus, 5—6 × 3.5—4.5 cm, obtusus, 1—3-spermus, stylo leviter apice impresso, glaber nitidus; pericarpium tenuiter carnosum; semina obovoidea a latere compressa, c. 3.5 × 1.8 × 1.2 cm, apice et basi obtusa brunnea nitida; cicatrix semine subbrevior, c. 3 mm lata, pallide brunnea, opaca; albumen copiosum; cotyledones foliaceae; radicula subulata, c. 6 mm, acuta, exserta. Calyx sub fructu ad 1.5 cm diam., lobis ovato-orbicularibus, c. 6 × 7 mm, obtusis, extus glabris, intus ferrugineis; pedicellus gracilis, c. 5 × 1 mm, glabra.

Typus: *Pearson Brothers s.n.* in BRI.

7. **P. maculata** van Royen — *Cf pag. 323 et fig. 28.*

Arbores, ad 25 m altae. Ramuli angulares, 3—6 mm diam., canescenti- et ferrugineo-tomentosi. Folia sparsa elliptico-oblonga, 6.5—12 × 2.5—4 cm, obtusa vel breviter obtuso-acuminata (acumine 1—2 mm longo), basi late cuneata, marginibus involutis, nervo marginali gracili munita; coriacea; glabra, supra nigromaculata (semper ?), nitida; subtus tomentosa maculata pilis canescentibus, albidis vel ferrugineis; costa supra leviter impressa et minute carinata, subtus prominens; nervi secundarii 5—8, ascendentes sub angulo 80°—90° curvati inconspicue arcuati sed praecipue sensim diminuentes, ultimo inconspicui, utrimque prominuli; nervi tertiarii transversi, supra conspicui, subtus prominuli; petiolus 0.8—2 cm longus, supra canaliculatus, maculatus ferrugineo- et albido-tomentosus. Flores fasciculati fasciculis paucifloris, ex alabastro tantum mihi cogniti; pedicellus 2—4 mm, angularis, dense ferrugineo-tomentosus. Sepala exteriora orbicularia, 1.5—2 mm longa et lata, obtusa vel retusa, utrimque ferrugineo-tomentosa; sepala interiora deltoidea, 1—1.5 × 2—2.5 mm, obtusa, utrimque ferrugineo-tomentosa; characteres ceteri a mihi non observati; pedicellus fructiferus robustus teres, c. 1 cm longus, apicem versus elatus, ferrugineo-sericeus. Sepala sub fructa orbicularia vel subdeltoidea, obtusa, 1.5—2 × 2—2.5 mm, extus et intus in parte apicali tantum ferrugineo-tomentosa. Fructus obovoidei, 1—1.5 × 0.7—0.8 cm, monospermus, ferrugineo-tomentosus; pericarpium solidum, intus conspicue venosi; semina obovoidea, 0.8—1.2 × c. 0.7 × c. 0.5 cm, flavida, nitida, apice obtusa, basi subacuta, cicatrix seminiis ¾ longitudinis metiens, obovata, 0.6—0.9 × 0.3—0.4 cm, brunnescenti-flava; embryo ignotum.

Typus: *Brass & Versteegh* in L.

8. **P. macropoda** H. J. Lam, var. **multinervis** van Royen — *Cf pag. 328.*

Folia 25—32 × 7—11 cm; nervi secundarii 19—29, ascendentes sub angulo 80°—90°. Fructu 3—4 × 1—2.5 cm. Seminum cicatrix c. 30 × 4 mm.

Typus: *Clemens 8938* in A.

9. **P. cyclopensis** van Royen — *Cf pag. 333 et fig. 29.*

Arbores, circa 25 m alta. Ramuli crassi robusti 5—10 m diametientes angulares solidi ferrugineo-puberuli ad lanati. Folia sparsa, elliptica ad subobovata, 17—27 × 7—13 cm, apice obtusa, retusa vel breviter obtuse vel acute acuminata (acumine 1—3 mm longo), basin versus angustata et secus petiolum breviter decurrentia, marginibus interdum undulatis, nervo intramarginali tenui, coriacea, juvenilia utrimque ferrugineo-villosa, adulta in pagina superiori costa et nervis canescenti-tomentosis exceptis, sparsissime pilosa; costa supra carinata sed in parte basali applanata, subtus prominens, nervi secundarii 12—16, sub angulo 60°—70° ascendentes, erecti vel interdum in parte apicali solum curvati, arcuatum conjuncti, supra prominuli, subtus distincte prominentes, nervi tertiarii transversi supra tenues et inconspicui, subtus prominentes. Petiolus 3—5 cm, supra applanatus, supra ferrugineo-tomentosus ad sericeus. Flores fasciculati fasciculus 1—8; pedicellus angularis, robustus, 12—16 mm, pilis ferrugineis et canescentibus intermixtis tomentosus ad sericeus, basi bracteatus bracteis minutis lanceolatis ad 2 mm longis, ferrugineo-tomentosus. Calyx 5 vel 6-lobus, 5—6 mm, lobis deltoideis 3—4 × 3—4 mm, obtusis, extus ferrugineo-pubescentibus, intus albidis. Corolla 6—7.5 mm, lobis elliptico-oblongis, c. 3.5 × 2 mm, subtruncatis. Stamina 5.5—6 mm, in parte quarta basali inserta, filamentis filiformibus, 4—4.5 mm, in parte quarte apicali excurvatis et declinatis, sed apice ascendenti, antheris sagittatis, c. 1.5 mm, apce mucronulatis, base obtusis, lateraliter dehiscentibus. Staminodia subulata ad lanceolata, c. 1.6 mm, acuta. Ovarium ovoideum, c. 2 × 2.5 mm, pallide ferrugineo-strigosum, discus adnatus, e fasciculis 5 strigarum ferruginearum compositus, stylus filiformis, 5—6 mm, accrecens. Fructus oblique obovoideus, 2—4 × 1.5—2.5 × 1—2 cm, (semper?) monospermus, fructus tomentosus pilis confertis sparsis pallide ferrugineis, pericarpium carnosum; semina fusiformia, lateraliter compressa, 2.2 × 1 × 0.7 cm, apice acuta, basi obtusa, hilo oblongo semine aequilonga, c. 2.5 mm lata, canescente, testa dura; albumen copiosum, cotyledones foliacei, tenui, radicula ignota.

Typus: *van Royen 3770* in L.

10. **P. queenslandica** van Royen — *Cf pag. 341 et fig. 32.*

Arbores vel frutices. Ramuli teretes vel angulares, 2—4 mm diam., ferrugineo-sericei sed glabrescentes. Folia sparsa, oblonga ad ovata, 5—10 × 1.5—3 cm, obtusa ad breviter obtuso-acuminata (acumine 0.5—2 mm longo), basi late cuneata, abrupte contracta et in petiolum decurrentia, nervo marginali gracili sed conspicuo munita; coriacea; glabra; utrimque opaca; costa supra canaliculata, minute carinata, subtus prominens; nervi secundarii 7—9, ascendentes sub angulo 55°—65°, erecti, interdum curvati, diminuentes et ultimo inconspicui, raro irregulariter arcuati, supra impressa, subtus prominula; nervi tertiarii transversi, a reticulatione percursi, utrimque prominuli ad inconspicui; petiolus 0.8—2 cm longus, supra canaliculatus, albido-sericeus, glabrescens. Flores ♀ vel ⚥ solitarii vel in fasciculos paucifloros collecti; pedicellus gracilis, angularis, 5—10 mm, costatus, albido-sericeus. Sepala triangularia ad late ovata, 2—3.5 × 2—3 mm, obtusa, extus albido-sericea, margine fimbriato, intus pallide flavo-sericea; sepala interiora margine membranacea. Corolla 3.5—4.5 mm, lobis suborbicularibus, 2.5—3 × 2—2.5 mm, truncatis, interdum graciliter ciliatis. Stamina 1—1.5 mm longis, in parte tertia basali inserta, incomplete cognita, filamentis lanceolatis. Staminodia petaloidea ad lanceolata, 1—1.5 mm. Pistillum anguste elongato-conoideum, 3.5—4 mm longum, distincte 5-costatum, apice stigmatibus 5 coronatum; discus 10-lobati, dense pallide roseo-strigosi. Fructus ignotus.

Typus: *Haines 136 Q* in K.

11. P. papyracea van Royen — *Cf pag. 347 et fig. 35.*

Arbores. Ramuli angulares, 3—6 mm diam., ferrugineo- vel nigro-tomentosi, adulti glabri. Folia sparsa vel ad ramulorum apices sub-conferta, obovata ad obovata-elliptica, 8—18 × 3—7.5 cm, apice rotundo, obtuso vel leviter obtuso-acuminato, basin versus angustata et brevissime in petiolum decurrentia; marginibus involutis, nervo marginali gracillimo munita; coriacea; supra glabra, nitida, subtus tomentosa pilis nigris, ferrugineis vel flavidis; costa supra impressa et minute carinata, subtus valde prominens; nervi secundarii 13—17, leviter curvati, sed praecipue erecti et apice tantum curvati, ascendentes sub angulo (60°—)75°—90°, arcuati, interdum propter nervos tertiarios incrassatos tantum, supra applanati ad impressi, subtus valde prominentes; nervi tertiarii transversi, supra inconspicui, subtus prominentes, reticulatione inter nervos transversos posita supra alveolos distinctos formante; petiolus 2—3 cm, supra applanatus et in parte apicali minute carinata, subnigro- vel ferrugineo-puberulus. Flores in fasciculos pauci- vel multi-flores collecti; pedicellus angularis, 7—10 mm, ferrugineo-lanuginosa. Sepala ovata, 3—3.5 × 2.5—3 mm, obtusa ad subacuta, extus ferrugineo-tomentosa et interdum carinata, intus ferrugineo-sericea, sepalis interioribus margine membranaceo et ciliato. Corolla 4—5 mm, lobis suborbicularibus, c. 1.5 × 1.5 mm, subtruncatis ad retusis. Stamina 2.5—3.8 mm, in parte quarta basali inserta, filamentis lineari-subulatis, 2—2.5 mm longis, antheris oblong-ovoideis, 1—1.5 mm longis, obtusis, mucronatis, lateraliter dehiscentibus; thecarum basis obtusa. Staminodia oblonga, 1.5—2 mm longa, apice cordata vel truncata. Ovarium globosum, in stylum attenuatum, 1—2 mm diam., ferrugineo-hispidulum; stylus 5-costatus, 2.5—3.5 mm longus, 5-stigmatus. Fructus obovoideus, c. 2 × 1.5 cm, rotundus vel obtusus; apice leviter impressus, 2-spermus, olivaceus, nitidus, annulo basali albido-sericeo excepto glaber; pericarpium papyraceum; semina obovoidea, unilateraliter applanata, c. 1.8 × 0.8 cm, basi et apice obtusa, brunnea. nitida. Hilo seminis ¾ longitudine metiens, 1.5—2 mm lata, satis fusca, opaca; albumen copiosum; cotyledones foliaceae; radicula conoidea, c. 3.5 mm longa, acuta.

Typus: *Krauss 102* in BRI.

12. P. dies-reginae van Royen — *Cf pag. 352 et fig. 36.*

Arbores, ad 25 m. Ramuli angulares, 3—5 mm diam., glabri. Folia sparsa, lanceolata ad elliptico-oblonga, 5—10 × 1.4—3 cm, apice acuminata (acumine 2—4 mm longo), basi cuneata, nervo marginali gracili munita; coriacea; glabra, sat brunnea, supra nitida, subtus opaca; costa supra prominula, subtus prominens; nervi secundarii 8—15, ascendentes sub angulo 80° (70° in parte apicali, 110° in parte basali), arcuati, utrimque prominuli; nervi tertiarii nervos secundarios transverse positi vel eis paralleli; venulae inter nervos tertiarios reticulatae; apud folia juvenilia nervorum tertiariorum singulus tantum saepe ex aequo conspicuus quam nervi secundarii, eis parallelus, hanc propter nervorum secundariorum numero ad 24 addito, supra inconspicuus, subtus prominulus; petioli 1.2—1.5 cm, supra canaliculati, basi elati, glabri. Flores ♀ vel ⚥ (?), fasciculati, immaturi tantum a me visi; pedicelli angulares, 0.7—0.8 cm, canescenti-tomentosi. Sepala exteriora squamata, 1.5—2 × c. 2 mm, obtusa, extus glabra, intus tomentosa in parte centrali tantum, apice fimbriata; sepala interiora triangularia, c. 1.5 × c. 1 mm, obtusa, extus glabra, apice fimbriata, intus tomentosa in parte centrali tantum. Corolla incomplete cognita, lobis spathulatis, c. 1.5 mm. Stamina ignota. Staminodia spathulata, c. 0.5 mm. Ovarium conoideum, c. 1 × 1 mm, dense ferrugineo-strigosum, in stylum stigmatibus 5 munitum attenuatum, an discus adest ?. Fructus brunneus, obovoideus ad globosus, c. 1.5 × 1.5 cm, 5 locularis, 2—3-spermus, dense ferrugineo-tomentosus; pericarpium spongiosum, lignosum, semina incomplete cognita, c. 1 cm longa (vel longiora ?), nigro-brunnea, hilum munita; hilum pallidum semine subbrevior; albumen copiosum; cotyledones foliaceae; radicula cylindrica, 1.5—2 mm, obtusa, exserta; pedicellus sub fructu ad 2.2 cm; calycis lobi ad 1.5 mm longi, parte centrali interiore excepta glabri.

Typus: *Brass & Versteegh 13150* in L.

13. **P. linggensis** (Burck) Pierre, var. **vinicolorata** van Royen — *Cf pag. 387*

Nervi secundari 8—12. Folia juvenilia subtus rutilo-ferrugineo-lanata. Petiolus, pedicellus et sepalorum pagina exterior rutilo-ferrugineo-lanata. Fructus 1—2.5 × c. 1 cm, 1—3-spermus.

Typus: *Kostermans 2242* in L.

14. **P. ripicola** van Royen — *Cf pag. 372 et fig. 38.*

Arbor, c. 15 m alta. Ramuli teretes ad angulares, 1—5 mm diam., juveniles nigrescenti- ad canescenti-sericei, glabrescentes, adulti nigrescentes. Folia sparsa, elliptica vel subobovata, 10—25 × 4—10 cm, apice obtuso-acuminata, acumine 0.5—2.5 cm longo, basi anguste cuneata, breviter decurrentia, nervo marginali munita, membranacea, supra nitidula, subtus opaca, glaberrima, folia nondum evoluta solum nigrescenti vel canescenti-sericea, costa supra sulcata, interdum in parte apicali minute cristata, subtus prominente, nervis secundariis 6—9, sub angulo 60°—70° ascendentibus, erectis sed apice curvatis, utrinque prominentibus, plerumque arcuatim conjunctis sed interdum venis aliquot diminuentibus ad inconspicuis, nervis tertiariis transversis paucis, utrinque prominentibus, petiolis 1.2—5 cm, supra applanatis, adultis glabris. Flores flavo-virentes, 5-meri, fasciculati fasciculis 1—3-floris, pedicello gracili, 2—3 mm longo, sparsissime albido-sericeo. Sepala rotundata ad obovata, c. 1.2 mm diam., obtusa, extus sparse flavido-sericea, intus glabra, sepala interiora margine membranacea et ciliata. Corolla c. 1.5 mm longa, lobis late spatulatis, truncatis, obtusis, mucronulatis. Stamina c. 1 mm, in parte tertia basali inserta, filamentis lanceolatis, c. 0.5 mm, anheris ovoideis, c. 0.5 mm, obtusis, mucronulatis, lateraliter ad introrsae dehiscentibus. thecarum basi obtuso. Staminodia ad 1 mm longa, lanceolata, truncata. Ovarium obconicum, c. 1 × 1.5 mm, truncatum, pilis flavido-brunneis hirsutum, 5-lobatum, stylo cylindrico 5-costato, 1—1.5 mm. Fructus viridis globosus vel subglobosus, 3.5—8 × 3—8 cm, subquinquelobatus, 5-spermus, pericarpio spongioso lignescenti, annulo basali albido-tomentoso excepto glaber, seminibus oblique fusiformibus, 20—25 × 8—10 × 2—5 mm, basin et apicim versus subacutis vel acutis, luteolis, nitidis, hilo canescenti, semine aequilongo, c. 8 mm lata, albumine copioso, cotyledonis foliaceis, radicula cylindracea, c. 2 mm, obtusa, pedicello sub fructu robusto, c. 10 × 6 mm, glabro.

Typus: *van Royen 3098* in L.

15. **P. costata** (Endl.) Pierre, var. **smithii** van Royen — *Cf p. 379.*

Folia 19—65 × 7—17 cm, subcoriacea, elliptica ad obovata, basi subabrupte decurrentia, apice rotundata interdum obtuse acuminata, nervis secundariis 10—27, nervis tertiariis distinctis, transversis; inter venae nervis tertiariis crebriores. Fructus maturus ellipsoideus vel obovoideus, usque ad 7 × 6 cm, pericarpio lignoso, dense ferrugineo vel albido-tomentoso.

Typus: *A. C. Smith 6368* in L.

16. **P. costata** (Endl.) Pierre, var. **umbonata** van Royen — *Cf p. 379.*

Folia 9—66 × 4—24 cm, coriacea, oblonga, basi cuneata, subabrupte decurrentia, apice obtuse subacuminata, nervis secundariis 9—12, nervis tertiariis robustis plerumque reticulatis reticulatione nervis secundariis parallela sed interdum nervis subtransversis intermixtis. Fructus maturus usque ad 5 × 5 cm, apice applanatus et umbonatus, vel umbonatus, sparse brunneo-tomentosus.

Typus: *A. C. Smith 8807* in L.

17. **P. pohlmaniana** (F. v. M.) Pierre, var. **asterocarpon** van Royen — *Cf p. 395 et fig. 42.*

Styli basis elatus sed stylus proper in fructus apici impressus. Pericarpium tenue. Fructus in sectione transversa stellatiformis. Ramuli, petioli et folia glabri.

Typus: *Kemp s.n.* in BRI.

18. **P. lamii** van Royen — *Cf p. 398 et fig. 44.*

Arbores ad 16 m altae. Ramuli teretes ad angulares, 2—4 mm diametientes, minute brunneo-tomentosi, glabrescentes. Folia sparsa, obovata, 4.2—10 × 2.5—5.3 cm, apice rotundata vel late obtusa ad leviter obtuso-acuminata (acumine ad 5 mm longo), basi cuneata, plus minus abrupte ad sensim in petiolum decurrentia, margine undulato et nervo tenui munito, rigido-chartacea utrimque ferrugineo- ad canescenti-tomentosa, glabrescentia; costa supra prominula, subtus prominens; nervi secundarii 5—7, sub angulo 60°—70° ascendentes, marginem versus curvati et arcuatim conjuncti interdum nervis tertiariis incrassatis connecti, utrimque prominentes; nervi tertiarii reticulati, prope costam ad nervos secundarios paralleli vel perpendiculares prope margines subtransverse positi, utrimque prominentes; petioli 1—2.8 cm, glabri. Flores solitarii vel in fasciculos paucifloros collecti; pedicelli c. 1 cm, sericei ad tomentosi, glabrescentes. Sepala irregulariter subrotundata, 2—3 × 2—3 mm, extus albido-sericea ad albido-tomentosa sed glabrescentia, intus glabra, margine membranaceo. Corolla nondum evoluta tantum a me visa, lobis orbicularibus, c. 1 mm diam. Stamina ignota. Staminodia membranacea, lanceolata, c. 0.7 mm longa, apice integro vel bifido. Gynaecium 0.3 cm longum; discus 5-lobatus, ad ovarium adnatus ferrugineo-pilosus et c. 2 × 1 mm; stylus glaber sulcatus elongato-conoideus, ex ovario subabrupte angustatus. Fructus immaturus viridis, ellipsoideus, c. 8 × 3 mm, stylo persistente coronati, 5-spermi; pericarpium carnosum, glabrum, nigrum; semina a me non visa.

Typus: *NIFS bb 14283* in L.

19. P. solida van Royen — *Cf p. 404 et fig. 46.*

Arbores, c. 30 m altae. Ramuli subangulares, 2—3 mm diametientes, sparse flavido-sericei glabrescentes. Folia prope ramulorum apices subconferta, elliptica ad obovata, 18—24 × 8.5—10.5 cm, apice acute acuminata (acumine c. 1 cm longo), basi late cuneata et abrupte angustata, breviter in petiolum decurrentia, nervo marginali tenui munita, membranacea, utrimque glabra, in vivo pallidevirentia; costa supra applanata, subtus rotundata, utrimque prominula; nervi secundarii 13—20, ascendentes sub angulo 60°—70° (in parte apicali c. 45°), curvati ad subsinuosi idemque arcuatim conjuncti, interdum diminuentes ad inconspicui, idemque nervis tertiariis incrassatis, utrimque prominentes; nervi tertiarii laxe reticulati, nervis secundariis subparalleli, prope marginem subtransversi, saepe unus nervus satis conspicuus et nervis secundariis subparallelus, utrimque prominulus; petioli 6—12 mm, supra subapplanati, glabri, sed ei foliorum supremorum pilis paucis brunneis muniti. Flores solitarii vel in fasciculos paucifloros congesti, mihi in alabastro tantum cogniti, pedicelli teretes, 6—9 mm, sparse ferrugineo-sericei. Sepala ovata ad triangulari-ovata, 3.5—4.5 × 3—3.5 mm, obtusa, utrimque sparse sericea pilis flavido-brunneis; sepala interiora margine membranaceo. Corolla 2—3 mm, lobis subquadrangularibus, c. 1 × 1 mm, truncatis ad retusis. Stamina 1—1.5 mm, leviter infra dimidiam inserta, filamenta linearii, sinuosi-curvata, c. 0.5 mm; antherae ovoideae, c. 1 mm, apice obtusae ad obtuse mucronulatae lateraliter dehiscentes; thecarum basis obtusa. Staminodia lanceolato-oblonga, c. 1 mm, obtusa ad retusa, apice applanata. Ovarium subglobosum, c. 1 mm diam., 5-lobatum, ferrugineo-strigosum; stylus firmus, 5-angularis, 1—1.5 mm. Fructus ignotus.

Typus: *Fryar 334* in SING.

20. P. crocodiliensis van Royen — *Cf p. 409.*

Frutices vel arbores ? Ramuli angulares, 2—4 mm diam., canescenti- vel ferrugineo-lanati, glabrescentes. Folia ad ramulorum apices conferta, spathulata, 2—4 × 0.2—1.1 cm, apice acute acuminata (acumine 1—2.5 mm), basin versus angustata et in petiolum longe decurrentia, nervo marginali inconspicuo, membranacea ad papyracea, utrimque canescenti-lanata ad sericea, supra glabrescentia; costa supra applanata, subtus prominens; nervi secundarii 4—6, ascendentes sub angulo 45°—55°, curvati, inconspicue arcuatim conjuncti, utrimque prominuli; nervi tertiarii reticulati, in utraque pagina impressi vel subtus prominuli; petioli 8—13 mm, supra applanati, canescenti-lanati ad sericei. Flores in fasciculos paucifloros congesti, mihi in alabastro tantum cogniti; pedicelli supra applanati, 8—13 mm, canescenti-lanati ad sericei. Sepala orbicularia ad late ovata, 1.5—2.5 mm in diam., obtusa, interdum late retusa, extus canescenti-sericea, margine fimbriato; intus glabra; sepala interiora margine membranaceo. Corolla c. 0.9 mm, lobis ovatis, c. 0.5 × 0.3 mm, obtusis. Stamina incomplete cognita, ad basin inserta, filamentis subulatis, c. 0.5 mm, antheris ignotis. Staminodea oblonga, 0.2—0.3 mm, obtusa. Ovarium ovoideum, c. 0.7 × 0.5 mm, truncatum. Fructus obovoideus, c. 2.5 × 2 cm, stylo ignoto sed styli basi elato, 5-spermi, pericarpio carnoso, basi excepta glabra; semina oblique fusiformia, lateraliter compressa, c. 15 × 7 × 5 mm, nitidi-brunnea, hilum semine

subbreviori, c. 2.5 mm lata, alba, opaca; albumen copiosum; cotyledones foliacei; radicula ignota. Calyx sub fructu expansus, ad 6 mm diam.

Typus: *Wilkins 216* in BM.

21. **P. baueri** (Montr.) Dubard, var. **brevipedicellata** van Royen — *Cf p. 418.*

Nervi secundarii ascendentes sub angulo 45°—55°. Folia subtus nervis tertiariis sat indistinctis munita, utrimque brunneo-tomentosa et interdum glabrescentia in pagina superiori tantum. Pedicellus 0.5—0.8 cm.

Typus: *Baumann 13788* in Z.

Index of collectors' numbers

The numbers between brackets indicate the number of the species. Those with the prefix D. or E. indicate the number of the doubtful or excluded species. S.n. means specimen without number.

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REVISION OF THE SAPOTACEAE OF THE MALAYSIAN AREA IN A WIDER SIDE

VIII [1]. Krausella H. J. Lam

by

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(Rijksherbarium, Leiden)

(Issued 15. VI. 1957).

Krausella H. J. Lam, Nova Guinea 14, 1932, 566.

Trees. *Leaves* estipulate, alternate, scattered, simple, oblong to obovate, petiolate, tertiary nerves transverse, often numerous, always faint. Inflorescences many-florous, fasciculate on brachyblasts which are inserted in the axils of leaves or their scars, rarely in those of stout petiole-like bracts. *Flowers* 6(—8)-merous. *Sepals* 6(—8), spirally arranged or pseudo-cyclical. *Corolla* exsert, lobes 6(—8), as long as or longer than tube. *Stamens* 6(—8), inserted just or well below the corolla-throat, epipetalous. *Staminodes* 6(—8), episepalous, inserted in the throat. *Ovary* 6(—8)-celled, borne on a short stout gynophore, disk infundibuliform at apex of gynophore, more or less connate with the basal (fertile) part of the ovary, the whole (except style) hispidulous pilose, cells episepalous, ovules one in each cell, inserted in the lower half of the cells, apotropous, micropyle inferior; style short, glabrous, truncate. *Fruits* unknown.

Type species: *Krausella forbesii* (Moore) H. J. Lam.

Distr.: Some 4 closely allied species in New Guinea.

Key to the species

1.a. Secondary nerves (6—)10—12(—19), not joined near margin, angle to midrib about 60°, tertiary nerves inconspicuous, angle to midrib about 140°; sepals connate halfway up, outer ones deltoid, acute, 2—3 by c. 1.5 mm, inner ones more obtuse, as long as outer ones . . **1. K. schlechteri** (Krause) H. J. Lam

b. Secondary nerves 15—40, tertiary nerves faint but conspicuous 2

2.a. Secondary nerves 30—40, angle to midrib 70°—90°, distinctly archingly joined near margin, angle of tertiary nerves to midrib about 115°; sepals connate less than halfway up, broadly ovate, c. 1(—4) by 2 mm, apex rounded or subacute **2. K. patentinervia** (Krause) Erlee

b. Secondary nerves 15—25, not always or only rarely joined near margin . . 3

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[1] I—III in Blumea 6, 3, 1952, 547—595; IV and V in Blumea 7, 2, 1953, 364—412; IVa in Blumea 7, 3, 1954, 481—483; IIa, IVb, Va, VI—XIX in the present use.

3.a. Secondary nerves 20—24, angle to midrib 55°—70°, mostly, though not always archingly joined near margin, angle of tertiary nerves 100°—110°; sepals connate halfway to 2/3 up, corolla 5—7 mm long, tube 2.5—3.5 mm long
3. **K. polyneura** (Krause) H. J. Lam

b. Secondary nerves (15—)18—22, angle to midrib 55°—70°, rarely archingly joined near margin, angle of tertiary nerves 105°—125°; sepals connate less than halfway up . . . . 4. **K. forbesii** (Moore) H. J. Lam

1. K. schlechteri (Krause) H. J. Lam, Nova Guinea 14, 1932, 567, t. 128 — *Beauvisagea schlechteri* Krause, Engl. Bot. Jahrb. 58, 1923, 482.

Lofty trees. *Branchlets* terete, sparsely brownish puberulous, glabrescent, bracts ovate or lanceolate, 0.3—1.8 cm long, apex acute, firmly coriaceous, sparsely brownish puberulous without, glabrous within. *Leaves* obovate, 15—17(—32) by 8—9(—14) cm, rounded at apex, gradually narrowing at base; thinly coriaceous, glabrous and nitidous above, sparsely and minutely puberulous below; midrib prominent below, impressed above, secondary nerves (6—)10—12(—19), ascending at an angle of c. 60°, straight, near margin diminishing until inconspicuous, not joined, tertiary nerves almost inconspicuous, reticulation lax, angle to midrib c. 140°; petioles c. 4—5 cm long, canaliculate above, sparsely puberulous. *Inflorescences* crowded in the upper region of the branchlets. *Flowers* 6-merous; pedicels c. 8 mm long, brownish puberulous. *Sepals* whorled in threes, connate halfway up, outer ones deltoid, apex acute, 2—3 by c. 1.5 mm, firmly coriaceous, sparsely brownish to greyish puberulous without, glabrous within, inner ones more obtuse, as long as outer ones, c. 2 mm broad, thin, glabrous on either side, margins irregularly and minutely undulate. *Corolla* c. 4 mm long in bud, tube c. 2 mm long, lobes ovate or ovate-oblong, c. 2 by 1 mm, apex acute. *Stamens* c. 2.5 mm long, filaments subulate or filiform, contracted at apex, c. 2 mm long, anthers ovoid, c. 1 mm long, versatile, basifix. *Staminodes* subulate or dentate (f. Lam), c. 2 mm long. *Pistillum* c. 4 mm long, with the indumentum subglobose, ovary gradually contracted into the style, densely covered with stiff brown hairs, gynophore c. 0.5 mm long, disk densely covered by stiff brown hairs; style c. 2 mm long, glabrous, grooved, truncate.

Type specimen: *Schlechter 16516* in B.

Lectotype specimen: *Schlechter 16516* in SING.

Distr.: New Guinea.

NEW GUINEA. N.E. New Guinea, Kelel, alt. 200 m: *Schlechter 16516* (SING), fl. Sept.

Remarks: Since the type specimen has probably been destroyed, the only duplicate which has come to our knowledge is proposed to serve as the type specimen. In this specimen the secondary nerves are only 10—12 in number (6 in a very small leaf), but in Lam's plate there are up to 19.

The flowers are very much like those of *K. polyneura* but the leaves are distinguished by the rather distant secondary nerves and the almost inconspicuous tertiary nerves which make an unusually large angle towards the midrib.

In the region of the inflorescences there are sometimes small rigid petiole-like organs c. 3—18 mm long, which are probably to be interpreted as bracts or as budscales (as are found in several *Ganua* species).

2. **K. patentinervia** (Krause) Erlee, nov. comb. — *Sideroxylon patentinervium* Krause, Engl. Bot. Jahrb. 58, 1923, 474; Lam, Nova Guinea 14, 1932, 567 (sub *K. polyneura*), t. 127 fgs b, f—h.

Tall trees. *Branchlets* terete, ferruginously puberulous, glabrescent. *Leaves* oblong, (20—)24—26(—28) by 9—11 cm, apex shortly acuminate, acumen c. 5 mm long, base obtuse or subcuneate; thinly coriaceous, glabrous and nitidous above, sparsely and minutely puberulous on midrib and secondary nerves below; midrib prominent below, impressed and minutely crested above, secondary nerves 30—40, ascending at an angle of 70°—90°, straight, near margin distinctly archingly joined, tertiary nerves distinct, angle of tertiary nerves and midrib c. 115°; petioles c. (3.5—)4—5 cm long, minutely canaliculate above, sparsely brownish puberulous. *Inflorescences* more or less crowded in the upper regions of the branchlets. *Flowers* 6-merous, partly known only; pedicels 8—10 mm long, sparsely brownish puberulous. *Calyx* c. 2 mm long, sepals connate less than halfway up, broadly ovate, firmly coriaceous, sparsely brownish puberulous without, glabrous within, c. 1(—4) by 2 mm, apex rounded or subacute.

Type specimen: *Schlechter 16746* in B.

Lectotype specimen: *Schlechter 16746* in P.

Distr.: New Guinea.

NEW GUINEA. N.E. New Guinea, Kani Mts, alt. 1000 m: *Schlechter 16746* (P), juv. fl. Oct.

Remarks: The number *16747* cited in literature is undoubtedly a printing error.

Since the type specimen has probably been destroyed, it is proposed to consider the only duplicate left as the type specimen.

K. patentinervia is a large tree from the higher hill belt, characterised by the numerous secondary nerves which ascend at almost right angles from the midrib and are distinctly archingly joined near the margin. Probably this species is also found in West New Guinea (cf sub *Krausella* sp. 1).

In the only duplicate available the flowers were too young to allow an analysis.

3. **K. polyneura** (Krause) H. J. Lam, Nova Guinea 14, 1932, 567, t. 127 fgs a, c—e, k—m — *Sideroxylon polyneurum* Krause, Engl. Bot. Jahrb. 58, 1923, 475.

Trees, 15—20 m high. *Branchlets* terete, brownish puberulous, glabrescent. *Leaves* oblong, 7—19 by 3—9 cm, apex obtuse or acuminate, acumen c. 5 mm long, base cuneate or subabruptly narrowing; thinly coriaceous, glabrous and nitidous above, sparsely ferruginously pubescent on underside of midrib only; midrib prominent below, impressed above, secondary nerves 20—24, ascending at an angle of 55°—70°, straight, near margin mostly archingly joined or sometimes diminishing until inconspicuous, tertiary nerves distinct on either side, angle to midrib 100°—110°; petioles (1.5—)2.5—3(—3.5) cm long, canaliculate above, sparsely puberulous. *Inflorescences* crowded in the upper regions of the branchlets; pedicels c. 1 cm long, sparsely brownish or ferruginously puberulous. *Calyx* c. 3—3.5 mm long, sepals connate halfway or $^2/_3$ up, rotundate-ovate, 1—1.5 by c. 2 mm.

firmly coriaceous, sparsely brownish to ferruginously puberulous without, glabrous within, apex rounded to obtuse. *Corolla* 5—7 mm long, tube 2.5—3.5 mm long, lobes ovate, 2.5—3.5 by c. 1.5 mm, apex obtuse. *Stamens* exsert, 2.5—4 mm long, inserted in the lower third of the corolla-lobes, but filaments connate with the corolla-tube almost halfway down, subulate, contracted at apex, anthers ovoid, 1.5—2 mm long, apex subacute. *Staminodes* lanceolate or subulate, c. 1.5 mm long, apex acute. *Pistillum* 3—4 mm high, ovary subglobose, 1—1.5 by c. 1 mm, densely covered with long and stiff ferruginous hairs, gynophore c. 0.5 mm high, disk densely covered with ferruginous long hairs; style glabrous, 2—2.5 mm, truncate.

Type specimen: *Ledermann 9054* in B.

Lectotype specimen: *Ledermann 9054* in K.

Distr.: New Guinea.

NEW GUINEA. N.E. New Guinea: Sepik area, Etappenberg, alt. 850 m: *Ledermann 9054* (K, SING), fl. Oct.; Morobe, Sattelberg, hill forest above mission, alt. 1020 m: *J. & M. S. Clemens 1971* (A, B), fl. March.

Remarks: The type being probably destroyed it is proposed to select the Kew duplicate as a lectotype specimen.

The Clemens specimen is most probably conspecific with the type specimen, the only difference being that in the former the secondary nerves are mostly (though not always) archingly joined near the leaf-margin, whereas this is only rarely so in the latter. Also this species is probably found in West New Guinea (cf. *Krausella* sp. 2).

K. polyneura is probably closely related or even identical to *K. forbesii* but for the time being is kept apart, since in the last-mentioned species only young flowers are now available. These are considerably smaller than the adult ones in *K. polyneura*.

Unfortunately Lam's figure in Nova Guinea does not state dimensions. In addition, the description of *Sideroxylon forbesii* by Moore is difficult to compare. This is why we prefer to keep on the safe side and postpone a decision until more material is available.

4. K. forbesii (Moore) H. J. Lam, Boissiera 7, 1943, 92 — *Sideroxylon forbesii* Moore, Journ. Bot. 61, June 1923, Suppl. 30 — *Planchonella forbesii* (Moore) H. J. Lam, Bull. Jard. bot. Bzg, Sér. III, 7, 1925, 217 and 8, 1927, 476.

Trees. *Branchlets* terete, minutely ferruginously tomentose on tips only, glabrescent, striate. *Juvenile leaves* recurved, adult ones oblong, 12—19 by 5—9 cm, apex broad, often shortly and bluntly acuminate, acumen c. 5 mm long, subabruptly narrowing at base; thin or firmly coriaceous, glabrous and nitidous above, sparsely and minutely brownish puberulous on midrib and secondary nerves below; midrib minutely crested and prominulous above, prominent below, secondary nerves (15—)18—22, ascending at an angle of 55°—70°, straight but curved near margin, diminishing until inconspicuous, rarely archingly joined near margin or connected by an odd incrassate tertiary nerve, tertiary nerves faint but distinct on either side, angle with midrib 105°—125°; petioles 2—4.5 cm long, canaliculate above, sparsely brownish puberulous. *Inflorescences* crowded in the upper regions of the branchlets; pedicels 8—10 mm long, scattered with ferruginous hairs.

Sepals 6 or 7, connate less than halfway up, rotundate-ovate, 2—2.5 by c. 1.5 mm, apex rounded or obtuse, firmly coriaceous, with scattered ferruginous hairs without, glabrous within. *Corolla* 6- or 7-lobed, examined in bud only. *Stamens* known incomplete only, anthers versatile, subbasifix, ovary covered with stiff ferruginous hairs.

Type specimen: *Forbes 756* in MEL.

Distr.: New Guinea.

New Guinea. S.E. New Guinea, Sogeri region, base of Owen Stanley Range, Mt Wori-Wori, alt. c. 1500 m: *Forbes 756* (FI, K, L, MEL), juv. fl.

UNIDENTIFIABLE SPECIMENS

The specimens mentioned below are undoubtedly congeneric.

The leaves are thin coriaceous, brown when dry, the young ones characteristically curved downwards in all specimens. In some cases there are additional erect bud-scales and a transition between these and petioles may be seen in occasional petiole-like structures or undeveloped leaves as are described for *K. schlechteri.* These characters, together with the general features of leaves and nervature, made us decide that the specimens quoted should provisionally be inserted in *Krausella,* but the comparison is hampered by the fact that in the flowering specimens the tips of the branchlets are either densely covered by flowers or have been cut away. In some cases, however, (*K. polyneura,* Clemens 1971), budscales of the type here described are extant.

1. Krausella sp.

Innovations with a brown appressed indumentum, young leaves recurved. Leaves ovate or oblong, base acute, apex acuminate, 11—21 by 5.5—11 cm; petioles 2—3.3 cm long, blade sparsely and very minutely pulverulent underneath to glabrous; midrib strongly prominent below, impressed above, secondary nerves 30—40, little or hardly curved, prominent below, angle with midrib 65°—70°, distinctly archingly joined near margin, tertiary nerves faint, transverse, angle with midrib 110°—130°. Sterile.

Specimen: *NIFS bb 30297,* found in West New Guinea, residency Geelvink Bay, Japen Isl., Seroei, alt. c. 700 m (A, L, SING).

Remarks: Probably close to *K. patentinervia,* but the leaf-bases are more gradually contracted and the petioles are shorter.

2. Krausella sp.

Leaves similar to those of the preceding specimen but generally smaller and narrower, more particularly so in *NIFS bb 32868,* and with fewer nerves (*32889*: 20—25, *32868*: 18—21), with smaller angle (in narrow leaves down to 50°), not archingly joined near margin. Both specimens show erect bud-scales (or young leaves) and recurved young leaves.

Specimens: *NIFS bb 32868,* found in South New Guinea, residency Geelvink Bay, Mimika district, Aria, old forest, flat country on dry sandy soil, c. 4 m alt. (BO, L), tree 19 m; *NIFS bb 32889* found in the same region near Aindua, old forest on flat country, clayish soil, alt. c. 5 m (BO, L), tree 17 m.

Vern. names: itoeroe, kamamina (Tarie dialect).

Remarks: Probably close to *K. polyneura* in which the lower portion of the leaves, however, is usually broader.

Index to collectors' numbers

The numbers between brackets indicate the number of the species in the text. Those with prefix D. indicate the number of the doubtful specimens.

Clemens & Clemens 1971 (3) — Forbes 756 (4) — Ledermann 9054 (3) — NIFS bb 30297 (D 1), 32868 (D 1), 32889 (D 2) — Schlechter 16516 (1); 16746 (2).

General Index

The numbers indicate the number of the species in the text.

Synonyms are printed in *italics*, a new combination is printed in **bold** figures.

Beauvisagea schlechteri Krause 1
Krausella forbesii (Moore) H. J. Lam 4
  patentinervia (Krause) Erlee 2
  polyneura (Krause) H. J. Lam 3
  schlechteri (Krause) H. J. Lam 1
Planchonella *forbesii* (Moore) H. J. Lam 4
Sideroxylon *forbesii* Moore 4
  patentinervium Krause 2
  polyneurum Krause 3

REVISION OF THE SAPOTACEAE OF THE MALAYSIAN AREA IN A WIDER SENSE

IX [1]. Pouteria Aublet

by

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(Issued 15. VI. 1957).

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INTRODUCTION

In the present study only those species of the genus *Pouteria* have been incorporated which are found in the area covered by the Flora Malesiana, as well as those of Australia and western Polynesia.

The results of this study could not have been obtained without the kind help of the Directors of the herbaria of Berkeley, Brisbane, Bogor, Florence, Jamaica Plain, Kew, Lae, Leiden, London, Manila, Melbourne, Paris, Singapore, Stockholm, Sydney and Zürich to whom we express our most sincere thanks.

The abbreviations of the names of herbaria are those proposed by Lanjouw and Stafleu in the Index Herbariorum, ed. 3 (1956).

In all figures dimensions are given in mm.

GENERAL PART

Abbreviations of some references

Baehni 1942 = Ch. Baehni, Mémoire sur les Sapotaceae 2, Le genre Pouteria, Candollea 9, 1942, 147—476.
Dubard 1912 = M. Dubard, Les Sapotacées du groupe des Sideroxylées, Ann. Mus. col. Marseille 20, 1912, 1—90.

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[1] I—III in Blumea VI, 3, 1952, 547—595; IV—V in Blumea VII, 2, 1953, 364—412; IVa in Blumea VII, 3, 1954, 481—483; IIa, IVb, Va, VI—IX in the present issue.

Lam 1925 = H. J. Lam, The Sapotaceae etc. of the Dutch East Indies, Bull. Jard. bot. Bzg, sér. 3, 7, 1925, 193—218.
Lam 1927 = H. J. Lam, Further studies etc., Bull. Jard. bot. Bzg, sér. 3, 8, 1927, 467—476.
Lam 1932 = H. J. Lam, Sapotaceae, Nova Guinea 14, 1932, 544—570.

Vidoricum Rumphius, Herb. Amb., ed. 2, 1750, 185, t. 118 — **Pouteria** Aublet, Hist. Pl. Guiane Fr. 1, 1775, 85, excl. fr., sensu Eyma, Rec. trav. bot. néerl. 33, 1936, 159; Baehni 1942, 147—476, p.p. — *Lucuma* Molina, Saggia Chil., 1782, 186, p.p.; Bentham & Hooker, Gen. Pl. 2, 2, 1876, 654; Baillon, Hist. Pl. 11, 1891, 281; Engler & Prantl, Nat. Pfl. Fam. 4, 1, 1897, 142 and Nachtr., 1897, 273; Dubard 1912, 9; Lam 1925, 219; Lam 1927, 476; Heyne, Nutt. Pl. Ned. Ind., ed. 2, 1927, 1243; idem, ed. 3, 1950, 1243; Lam 1932, 567 — *Labatia* Sw., Prodr. Veg. Ind. Occ., 1788, 32 — *Sersalisia* R. Br., Prodr., 1810, 529, p.p. — *Beauvisagea* Pierre, Not. bot. Sapot., 1890, 15; Krause, Engl. Bot. Jahrb. 58, 1923, 482 — *Bureavella* Pierre, l. c., 16; Dubard 1912, 9; Krause, l. c., 486 — *Pichonia* Pierre, l. c., 22 — *Beccariella* Pierre, l. c., 30; Krause, l. c., 483 — *Fontbrunnea* Pierre, l. c., 31 — *Sebertia* Pierre ex Baillon, Bull. soc. linn. Paris 2, 1891, 945 — *Epiluma* Baillon, Hist. Pl. 11, 1891, 287 — *Rhamnoluma* Baillon, l. c., 288.

Diagnosis of the genus

Trees or *shrubs*, with latex. Branchlets terete, juvenile ones glabrous or tomentose and often glabrescent. *Leaves* papyraceous to thick-coriaceous, estipulate, alternate, or sometimes subopposite, scattered or more or less crowded towards tips of branchlets, juvenile ones often tomentose on either side, adult ones glabrescent, or sometimes appressedly tomentose above, rarely glabrescent below, or leaves from the beginning glabrous on either side; secondary nerves mostly markedly stronger than tertiary ones; sometimes delicate; tertiary nerves mutually parallel or reticulate, either more or less transverse or parallel with seconday ones. *Flowers* fasciculate in axils of leaves or their scars, sometimes inserted on brachyblasts, mostly pedicelled, sometimes sessile; bracteoles sometimes present, 2—4. *Sepals* 5, rarely 4 or 6, outside tomentose, inside glabrous or sericeous, connate at base only, caducous or persistent in fruit. *Corolla* exserted, sometimes slightly so, tubular or campanulate, lobes 5, sometimes 4, or up to 8. *Stamens* 5, sometimes 4, or up to 8, epipetalous, inserted just above or just below the corolla throat. *Staminodes* 5, or less, rarely absent, or more, up to 8, lanceolate or subulate, sometimes squamiform or petaloid, episepalous, inserted in the corolla throat. *Ovary* 5- or sometimes 6-celled, sometimes surrounded at base by a subcupular disk, more or less densely villous, rarely glabrous, conoidal, gradually contracted into style. *Fruits* 1—5-seeded, glabrous or puberulous, sometimes with long stiff bristles, pericarp thin or thick, sometimes becoming very hard when dry, testa thin to rather thick, shining, scar narrow, oblong or broad-ovate or occupying half of the surface or nearly the whole surface of the seed, hilum apical, sometimes basal, albumen absent or membranous, cotyledons thick, very rarely subfoliaceous, radicle inferior, punctiform, sometimes exsert.

Type species: *Pouteria guianensis* Aublet.

Distr.: About 150 species in tropical and subtropical America, Africa, Asia, Australia and the southwestern Pacific islands.

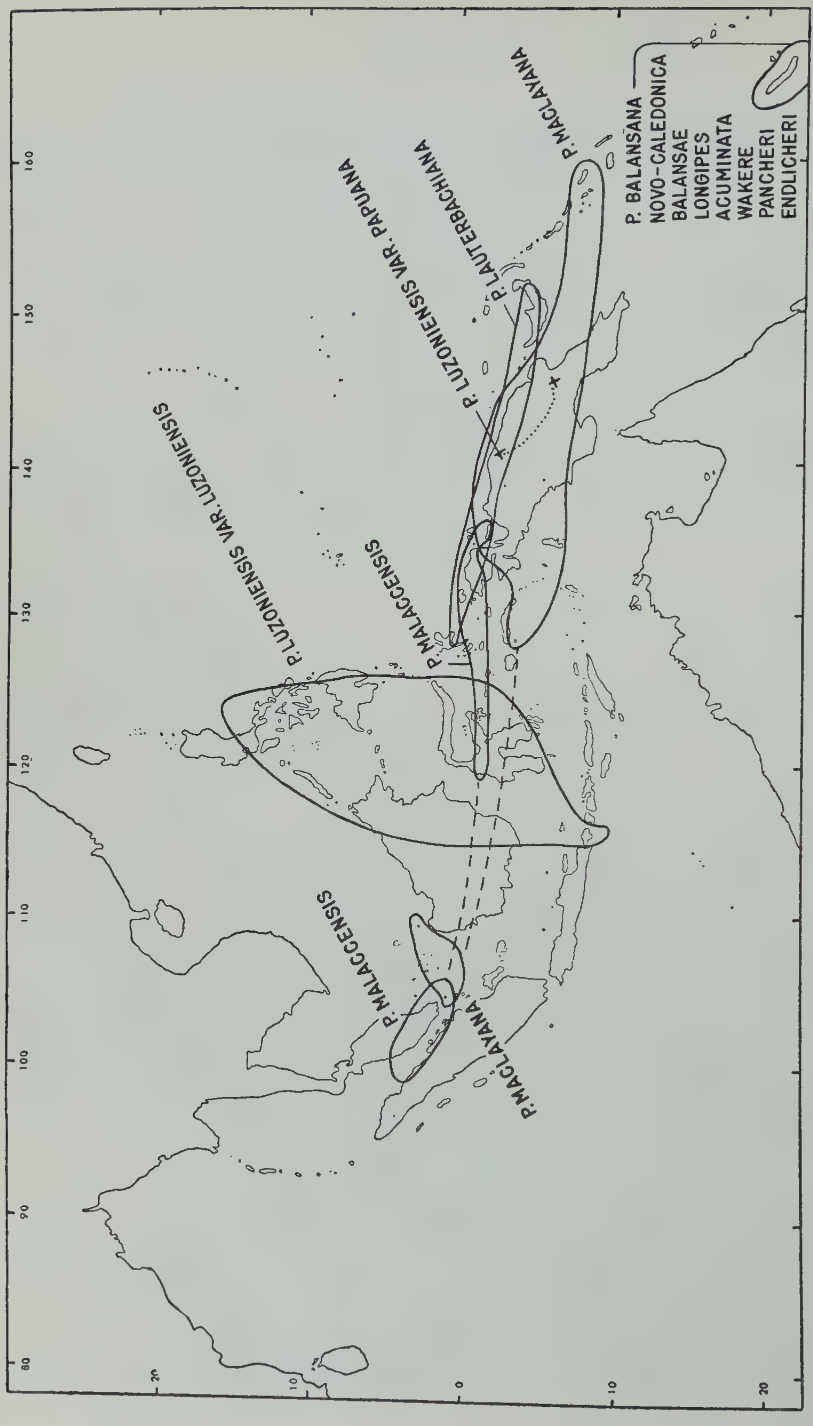

Fig. 1. Distribution of some species of Pouteria, I.

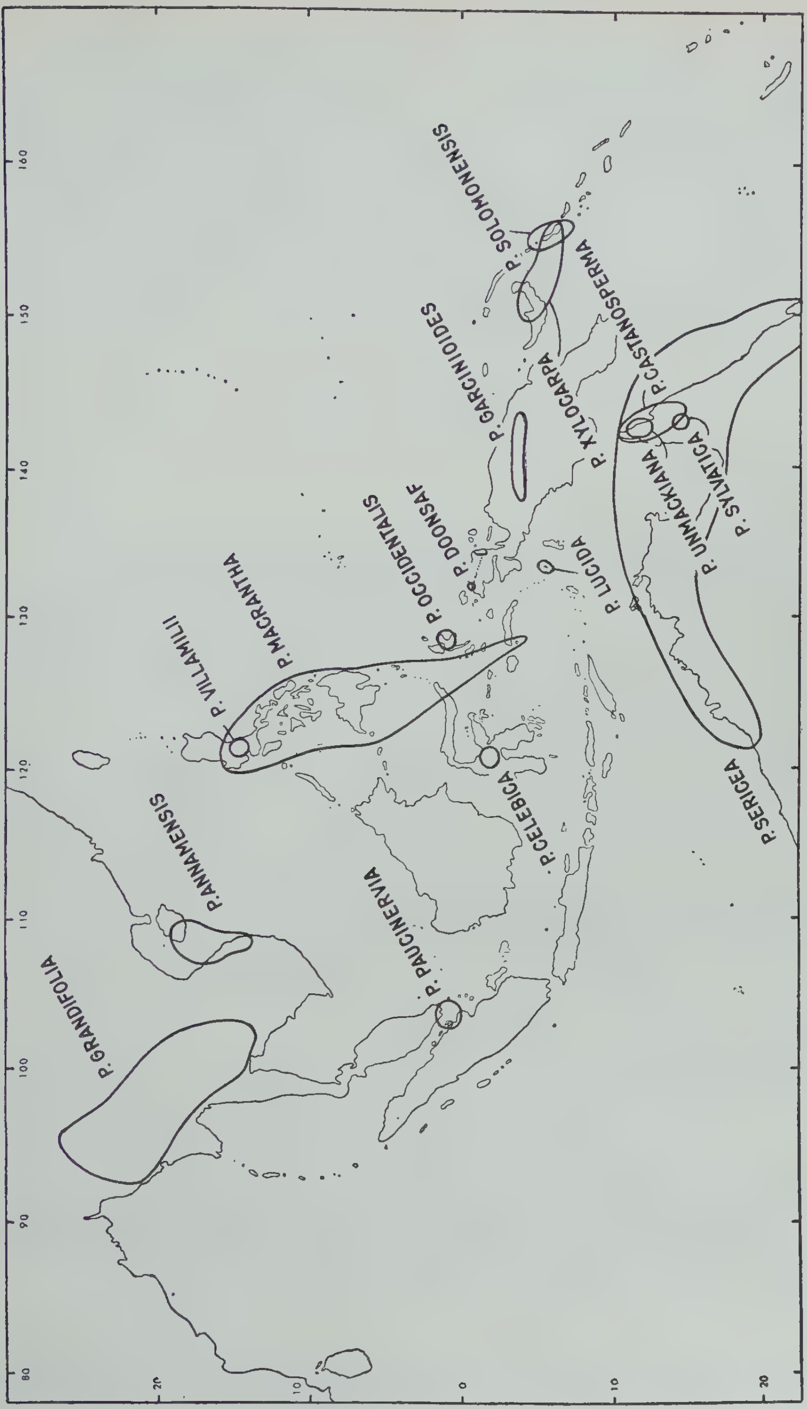

Fig. 2. Distribution of some species of Pouteria, II

Distribution. (*Fig. 1, 2*).

The 28 species treated in this publication cover an area reaching from Assam, Burma, Tonkin, Hainan and the Malay Peninsula to the Philippines, Solomons, New Caledonia and northern Australia. Eight of these are found in New Caledonia, which all are endemic to that island. In New Guinea 7 species are found of which, however, only 2 are endemic, while the 4 Australian species are restricted to that continent only. In the Philippines 4 species are found of which one is endemic.

The largest area is covered by *P. maclayana*, ranging from the Malay Peninsula and Riouw to the Solomons, though it has not yet been recorded from Sumatra, Borneo and Celebes.

TAXONOMIC PART

Key to the taxa 1)

1.a. Leaves opposite to subopposite 2

b. Leaves alternate 3

2.a. Leaves 10—20 by 6—8 cm, thin-coriaceous, secondary nerves prominent below; flowers in 6—11-flowered clusters; fruits subobliquely oblong, 3—5.5 by 0.8—1.8 by 0.7—1.4 cm, apex pointed. *Moluccas, New Guinea, Bismarck Archipelago*
10. P. lauterbachiana (H. J. Lam) Baehni

b. Leaves 3.5—15 by 0.8—5.3 cm, coriaceous, secondary nerves inconspicuous below; flowers in 4—6-flowered clusters, fruits globose; c. 2.5 by 2.3 by 2 cm. *Solomons*
24. P. solomonensis van Royen

3.a. Leaves with a stout marginal nerve 4

b. Leaves without such a marginal nerve 5

4.a. Flowers in 4—6-flowered clusters, pedicels c. 1 mm long, reddish or greyish woolly; leaves dark olivaceous-brown above when dry, petioles 0.5—2 cm. *New Caledonia* . . . . **16. P. pancheri** (Baillon) Baehni

b. Flowers solitary, pedicels 4—9 mm long, greyish or brownish tomentose; leaves pale yellow-brown above when dry, petioles 2—5.5 cm. *New Caledonia*
14. P. wakere (Pancher & Sebert) Baehni

5.a. Tertiary nerves distinctly transverse to secondary nerves 6

b. Tertiary nerves parallel to secondary nerves 26

6.a. Secondary nerves 19—22, ascending at an angle of 45°—70°, leaves obovate, 33—47 by 9.5—16.5 cm, glabrous when mature. *Halmahera*
7. P. occidentalis (H. J. Lam) Baehni

b. Secondary nerves 3—18, if more, leaves narrower than 5 cm or the petioles glabrous 7

7.a. Mature leaves completely glabrous below 8

b. Mature leaves tomentose below or with a few scattered hairs along midrib . 19

8.a. Sepals pubescent on either side 9

b. Sepals pubescent without only 12

9.a. Leaves 10—39 by 2—15 cm and petiole 15—50 mm long, if leaves smaller than 10 cm, secondary nerves 8—17 and pedicels 3—6 mm long 10

b. Leaves 2—8 by 1.2—5.5 cm, petioles 3—10 mm long, secondary nerves 3—8, pedicels 0—1 mm long 11

10.a. 1 or 2 flowers in each axil of leaves or scars; petioles grooved above, secondary nerves straight, angle of leafbase c. 90°, tertiary nervation perpendicular to secondary nerves; staminodes quadrangular or spatulate; fruits up to 10 cm in diam., seeds pale yellow with brownish spots. *New Guinea*
21. P. doonsaf van Royen

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1) In this key *P. garcinioides* (Krause) Baehni and *P. lucida* (Burck) Baehni are not included as the material was too scanty to provide reliable details.

b. 5—9 flowers in each axil, petioles flat above, secondary nerves curved, angle of leafbase 70°—90°, tertiary nerves mostly almost parallel to secondary nerves; staminodes linear, fruits up to 6.5 cm in diam., seeds dark brown. *Philippines, Celebes, Amboina* . . . . 20. **P. macrantha** (Merrill) Baehni

11.a. Petioles 3—5 mm long, flat above, greyish tomentose, mature leaves nitidous above, branchlets yellowish tomentose. *Australia* 8. **P. unmackiana** (Bailey) Erlee

b. Petioles c. 10 mm long, grooved above, glabrous, mature leaves dull above, branchlets brownish tomentose. *Australia* . . . . . 22. **P. sylvatica** Baehni

12.a. Leaves spatulate or obovate, 4—8 by 1—3 cm, apex obtuse, secondary nerves 4—6; fruits depressedly globose, 1.5—2 by 1.5—2 by 1.2—1.5 cm, reddish brown tomentose when dry. *Malay Peninsula and Sumatra* 23. **P. paucinervia** Erlee

b. Leaves lanceolate, ovate, elliptic or obovate, short or long acuminate and rarely rounded, 3—53 by 1.5—14 cm, secondary nerves 3—18; fruits globose or pyriform [1]), 2 cm or more in diam., glabrous or sparsely greyish tomentose, if smaller than 2 cm, the fruit blackish and glabrous and the petioles 15—45 mm long 13

13.a. Leaves broadly ovate, ovate or suboblong, (3—)5—8.5(—10.5) by (2—)2.5—6 (—6.5) cm, rounded or obtuse, secondary nerves 6—11, flowers in 10—15-flowered clusters. *New Caledonia* . . . . 5. **P. balansana** (Pierre) Baehni

b. Leaves elliptic or ovate, 3.5—53 by 1.5—14 cm, sometimes rounded and emarginate but mostly acuminate, secondary nerves 3—18; flowers in 1—5-flowered clusters 14

14.a. Petioles of mature leaves tomentose, leaves oblong, 3.5—12 by 2—5 cm, apex rounded, sometimes emarginate or indistinctly acuminate; flowers c. 1 cm long; fruits distinctly beaked. *New Caledonia* . . 6. **P. calomeris** (Baillon) Baehni

b. Petioles of mature leaves glabrous, leaves elliptic or obovate, 5—53 by 1.5—14 cm, obtusely or acutely acuminate; flowers always smaller than 4 mm; fruits rounded at apex 15

15.a. Pedicels of flowers and fruits 20—30 mm long; fruits 8—13 cm in diam.; leaves (6—)15—35.5(—53) by 3.5—10(—14) cm. *Lingga, Talaud, Nanusa, Amboina, Key, New Guinea, Solomons* . . . . 13. **P. maclayana** (F. v. M.) Baehni

b. Pedicels shorter than 10 mm, fruits smaller than 6 cm 16

16.a. Leaves thin-membranous; seeds pale yellow with light brown back. *Bismarck Archipelago, Solomons* . . . . 9. **P. xylocarpa** White

b. Leaves coriaceous, seeds brown 17

17.a. Leaves elliptic-ovate, acuminate, tapering towards apex over a long distance. *Philippines* . . . . 19. **P. villamilii** (Merrill) Baehni

b. Leaves obovate, obtusely acuminate or rounded 18

18.a. Leaves when young ferruginously tomentose, tertiary nerves reticulate and some of them parallel to the secondary nerves; pedicels ferruginously tomentose, flowers in 1—3-flowered clusters, sepals ferruginously tomentose without, inner ones with entire margins, ovary with ferruginous hairs, *Tonkin, Hainan* 15. **P. annamensis** (Pierre) Baehni

b. Leaves glabrous when young, tertiary nerves transverse, pedicels yellowish tomentose; flowers in 3—10-flowered clusters, sepals yellowish tomentose without, inner ones with fimbriate margins, ovary with pale yellowish hairs. *Assam, Burma, Siam* . . . . 17. **P. grandifolia** (Wallich) Baehni

19.a. Sepals pubescent on either side 20

b. Sepals pubescent without only 23

20.a. Leaves 10—39 by 2—15 cm and petiole 15—50 mm long, if leaves shorter than 10 cm, secondary nerves 8—17 and pedicels 3—6 mm long 21

b. Leaves 2—8 by 1.2—5.5 cm, petioles 3—10 mm long, secondary nerves 3—8; pedicels 0—1 mm long 22

21.a. 1 or 2 flowers in each axil of leaves or scars; petioles grooved above, secondary nerves straight, angle of leafbase c. 90°, tertiary nervation perpendicular to

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[1]) The fruit in *P. grandifolia* (Wallich) Baehni is unknown but this species can be separated from *P. paucinervia* Erlee by the bigger leaves (5—21 by 3.5—9.5 cm) and the longer petioles (15—40 mm).

secondary nerves; staminodes quadrangular or spatulate; fruits up to 10 cm in diam., seeds pale yellow with brownish spots. *New Guinea*
21. P. doonsaf van Royen

b. 5—9 flowers in each axil; petioles flat above, secondary nerves curved, angle of leafbase 70°—90°, tertiary nerves mostly parallel to secondary nerves; staminodes linear; fruits up to 6.5 cm in diam., seeds darkbrown. *Philippines, Celebes, Amboina*
20. P. macrantha (Merrill) Baehni

22.a. Petioles 3—5 mm long, flat above, greyish tomentose, mature leaves nitidous above, branchlets yellowish tomentose. *Australia*
8. P. unmackiana (Bailey) Erlee

b. Petioles c. 10 mm long, grooved above, glabrous, mature leaves dull above, branchlets brownish tomentose. *Australia* . . . . **22. P. sylvatica** Baehni

23.a. Leaves densely golden sericeous below, sometimes in the young leaves only so, tertiary nerves inconspicuous or invisible above 24

b. Leaves greyish, brown-yellowish or reddish tomentose below, tertiary nerves faint, distinct, or very conspicuous above 25

24.a. Leaves (5—)8—13(—17.5) cm long, petioles (0.5—)0.9—2 cm long; corolla glabrous on either side. *Kangean, Bali, North Borneo, Philippines, Sulabesi, New Guinea*
2. P. luzoniensis (Merrill) Baehni
var. **luzoniensis**

b. Leaves (2.5—)3—6(—7.5) cm long, petioles 0.3—1 cm long; corolla ferruginously without. *New Guinea* . . . . **2. P. luzoniensis** (Merrill) Baehni
var. **papuana** Erlee

25.a. Leaves obovate or spatulate, 8—22 by 4—12 cm, at base abruptly narrowed and tapering over a short distance along petiole. *Malay Peninsula, Sumatra, Riouw, Lingga, Celebes, New Guinea* . . . . **3. P. malaccensis** (Clarke) Baehni

b. Leaves spatulate, oblanceolate or obovate-lanceolate, 12—17.5 by 2.5—5.5 cm, gradually narrowing at base and tapering over a long distance along petiole *New Caledonia* . . . . **11. P. longipes** (Baillon) Baehni

26.a. Mature leaves pubescent below 27

b. Mature leaves glabrous below 32

27.a. Proportion of length of leaf plus petiole: width of leaf = c. 4 or more . . 28

b. This proportion 1.5—3, if more, then leaves neither spatulate nor acute and tertiary nerves stout and conspicuous above 29

28.a. Leafbase when seen from below tapering over a long distance along petiole. *New Caledonia* . . . . **11. P. longipes** (Baillon) Baehni

b. Leafbase shortly or not tapering along petiole. *New Caledonia*
12. P. acuminata (Baillon) Baehni

29.a. Leafbase when seen from below tapering over a long distance along petiole, leaves brownish tomentose below. *New Caledonia*
14. P. wakere (Pancher & Sebert) Baehni

b. Leafbase very shortly tapering along petiole, leaves golden-yellowish sericeous below 30

30.a. Mature leaves densely pubescent below 31

b. Mature leaves with a few scattered hairs along the lower side of midrib. *Philippines, Celebes, Amboina* . . . . . **20. P. macrantha** (Merrill) Baehni

31.a. Leaves (5—)8—13(—17.5) cm long, petioles (0.5—)0.9—2 cm long; corolla glabrous on either side. *Kangean, Bali, North Borneo, Philippines, Sulabesi, New Caledonia*
2. P. luzoniensis (Merrill) Baehni
var. **luzoniensis**

b. Leaves (2.5—)3—6(—7.5) cm long, petioles 0.3—1 cm long; corolla ferruginously sericeous without. *New Guinea* . . . . **2. P. luzoniensis** (Merrill) Baehni
var. **papuana** Erlee

32.a. Leafbase rounded or cordate 33

b. Leafbase cuneate, tapering along petiole 34

33.a. Leaves 1—6 by 0.5—4 cm; pedicels 1—1.6 cm long, corolla 9 mm long. *New Caledonia* . . . . **4. P. novo-caledonica** (Engler) Baehni
var. **novo-coledonica**

b. Leaves 4—7.5 by 2—3.5 cm; pedicels c. 5 mm long, corolla c. 4 mm long. *New Caledonia* . . . . **4. P. novo-caledonica** (Engler) Baehni
var. **lecomtei** (Guill.) Erlee

34.a. Secondary nerves of leaves 20—30, one or two tertiary nerves parallel to the secondary ones between each pair of the latter. *New Caledonia*
25. P. endlicheri (Montr.) Baehni
b. Secondary nerves 5—18, tertiary nerves reticulate, but if some nerves parallel to the secondary ones, the latter c. 10 35
35.a. Leaves lanceolate, 11—20.5 by 5—6 cm, acute or acutely acuminate, thick-coriaceous. *Celebes* . . . . **18. P. celebica** Erlee
b. Leaves oblong, obovate or elliptic, 2.5—15.5 by 0.5—6.5 cm, obtuse or obtusely acuminate, membranous to coriaceous 36
36.a. Flowers in 10—15-flowered clusters. *New Caledonia*
5. P. balansana (Pierre) Baehni
b. Flowers 2 or 3 in each cluster 37
37.a. Fruits beaked 38
b. Fruits globose. *Tonkin, Hainan* . . . . **15. P. annamensis** (Pierre) Baehni
38.a. Leaves membranous, elliptic, apex obtusely acuminate, mature petioles and pedicels of flowers glabrous; sepals pubescent on either side. *Australia*
26. P. castanosperma (White) Baehni
b. Leaves coriaceous, oblong, mature petioles and pedicels of flowers pubescent; sepals pubescent without, glabrous within. *New Caledonia*
6. P. calomeris (Baillon) Baehni

Specific descriptions

1. P. sericea (Ait.) Baehni, 1942, 375 — *Sideroxylon sericeum* Aiton, Hort. Kew., ed. 1, 1, 1789, 262 — *Sersalisia sericea* (Ait.) R. Br., Prodr. 1, 1810, 530; A. DC, Prodr. 8, 1844, 177; F. v. Mueller, Fragm. 7, 1870, 112; Bentham, Fl. Austr. 4, 1869, 279, p.p. — *Lucuma sericea* (Aiton) Benth. & Hooker, Gen. Pl. 2, 1876, 654; Engler & Prantl, Nat. Pfl. Fam. 4, 1, 1897, 142, f. 76 E; Bailey, Compr. Cat. Qld Pl., 1909, 305 — *Planchonella sericea* (Ait.) Dubard, 1912, 47.

Trees or shrubs, up to 10 m. *Branchlets* terete, c. 5 mm in diam., greyish when dry, tips dense appressedly ferruginously or golden-brownish tomentose, glabrescent, thickly foliate, terminal buds conoid, c. 3 mm long, densely ferruginously or golden-brownish tomentose. *Leaves* ovate to orbiculate-ovate, rarely obovate, 2—9.5 by 1.5—5.5 cm, apex rounded to obtuse, angle of leafbase 90° or more, sometimes less; chartaceous, upper surface greyish to ferruginously or golden-brownish tomentose but glabrescent and then nitidous, lower surface ferruginously appressedly tomentose and rarely glabrescent; midrib impressed above, prominent below, secondary nerves 5—15, nearly inconspicuous above, faint below, straight, reticulate near margins, sometimes archingly joined by some thickened tertiary nerves, ascending at an angle of 50°—60°, tertiary nerves hardly conspicuous on either side, minutely reticulate; petioles 2—5(—7) mm long, ferruginously tomentose on either side, glabrescent, flat or broadly canaliculate above, rounded below. *Flowers* in 4—6(—15)-florous clusters near apex of branchlets; pedicels c. 2 mm long, ferruginously tomentose. *Sepals* 4 or 5, connate at base, ovate, c. 3 by 1.5 mm, subcarinate, apex acute, ferruginously sericeous without, glabrous within, inner ones with membranous and minutely ciliate, glabrous margins. *Corolla* tubuliform, 5—6.5(—8) mm long, ferruginously sericeous without, glabrous within, tube 3.5—5.5 mm long, subconstricted in upper half, lobes suborbicular, 1.5—2 by 1.5—2.5 mm, apex truncate. *Stamens* c. 0.5 mm long, adnate to the tube up to c. 4.5 mm from base, filaments subulate, anthers ovoid, c. 1 mm, subbasifix. *Staminodes* deltoid, 1—1.5 mm long. *Pistillum* c. 6.5 mm long, ovary conoid, tapering into style, c. 1 by 1 mm, obscurely 5-furrowed at base, densely ferruginously villous, ovules apically attached; style filiform, ferruginously sericeous up to one third, with 5 stigmas. *Fruits* oblong, sessile, c. 2 by 1 by 1 cm, glabrous except for the base and persistent style, pericarp thin, purple; seeds solitary, oblong, c. 1.8 by 0.8—1 by 0.7—1 cm, testa thin, nitidous, yellowish, scar oblong, c. 1.8 by 0.2—0.4 cm, hilum apical, cotyledons thick, albumen none, radicle exserted.

Lectotype specimen: *R. Brown s.n.* in K.

Vern. name: mongo (Mt Cook natives).

Use: A useful cabinet wood.

Distr.: Australia (W, NW, N and NE Australia, Queensland).

AUSTRALIA. W. Australia, W. Kimberley, Cygnet Bay: *Fitzgerald s.n.* (NSW), fl., Nov.; Beagle Bay: *Hughan s.n.* (MEL), juv. fl. — N.W. Australia, York Sound, Roes river: *Cunningham 218* (K), fl. Sept.; Camden's Harbour: *Martin s.n.* (MEL), juv. fl.; King Sound, Hallier Bay: *Chapman s.n.* (MEL) — N. Australia, Arnhem Land, Oenpelli, in mixed open forest at base of sandstone scarp: *Specht 1202* (NSW), tree 6 m, corolla pale yellow, fr. purplish glack, Oct.; Little Lagoon, Groote Eylandt, in monsoon forest on coastal dune: *Specht 247* (LAE), tree 8 m, corolla greenish white, April; Yirrkala, in monsoon forest on coastal dune: *Specht 928* (BRI, LAE), tree 5 m, fl. pale green, Aug.; South Bay, Bickerton Island, on landward edge of coastal dune: *Specht 573* (BRI, LAE), tree 5 m, fl. brown, fr. edible, June; Liverpool's river: *Gulliver s.n.* (MEL), a spreading stunted shrub with small whitish flowers, Oct.; Victoria river: *F. v. Mueller s.n.* (MEL); Port Darwin: *Schulz 691* (K, P), fl., Nov.; ibidem: *Bleeser 522* (NSW), fl., April; ibidem: *Holtze 1072* (MEL), tree up to 6 m, fl. & fr.; Darwin, in monsoon forest on top of seacliff: *S. T. Blake 17326* (BRI, L), tree up to 6 m, calyx rusty, corolla greenish white, fl., Oct.; Middle Creek, near junction with Douglas Road, creek bank along limestone boulders, alt. 52 m: *S. T. Blake 16241* (BRI, L), shrubby tree, 5—8 m, fl. brownish, June; without locality: *Eclipse Expedition s.n.* (NSW) — N.E. Australia, without loc.: *Curdie s.n.* (MEL), fl. — Queensland, Cape York: *Daemel s.n.* (K, MEL), fl., March; Somerset, sea beach: *Bailey 74* (BRI), tree; Thursday Island: *Bailey 88* (BRI), fl., June; Endeavour River: *Persiek 132* (BRI, MEL), fl.; Endeavour river and Bay of Islets: *Banks & Solander s.n.* (MEL), juv. fl.; Lizard Islands: *Walter s.n.* (MEL), fl., Dec.; Gilbert river: *F. v. Mueller s.n.* (L, MEL); ibidem: *Daintree s.n.* (MEL), fl.; Stannery Hills: *Bancroft s.n.* (A, BRI, NSW), fl.; Sandy Tate river: *Brass 1750* (A, BRI), bushy tree in river bed; Bloodwood Lagoon, 16 miles S of Dunbar, which is c. 60 miles SE of mouth of Mitchel river: *Whitehouse s.n.* (BRI), fl.; Georgetown: *Armit 704* (MEL), fl.; N. Kennedy district, near Townville, in stony stream, alt. c. 10 m: *S. T. Blake 18716* (BRI, L), tree 6 m, greenish flowers, Oct.; Townsville: *Betche s.n.* (NSW), fl., Aug.; ibidem, on seashore: *Michael 1697* (BRI), tree c. 4.5 m, fl.; Cleveland Bay: *Bowman s.n.* (MEL), fl.; Edgecombe Bay, on sandy foreshores: *Michael 1231* (BO, BRI), fl.; ibidem: *Dallachy s.n.* (MEL, P), fl.; Port Denison: *Dallachy s.n.* (MEL), fl.; ibidem: *Fitzalan s.n.* (MEL), juv. fl.; Hayman island, N. of White Sunday island, on top of hill: *Mac Gillevry s.n.* (A, BRI), fl., Dec.—Jan.; ibidem: *White 10149* (BRI), fl. June; Bowen, top of hill N of town, amongst sandstone rocks, alt. 90 m: *Hubbard & Winders 6539* (BRI, L), tree up to 4.5 m, fl., Jan. — S. Queensland, Long Island, rain forest: *White 12176* (BRI), tree 10 m; Northumberland Group: *Woods 9* (MEL), Nov.; Percy Islands, Middle Percy island: *Tryon s.n.* (A), fl., Jan.; ibidem, South Percy island: *Tryon s.n.* (BRI), fl., March, fr. edible; Keppel Bay, Shoalwater Bay: *R. Brown s.n.* (K, MEL), fl. & fr. Aug.; Curtis island: *O'Shanesy 48* (MEL), shrub 1.80 m, lf.; Yeppoon, near Rockhampton: *Francis s.n.* (A, BRI), fl. March; Rockhampton: *F. v. Mueller s.n.* (BO, L); ibidem: *Dallachy s.n.* (MEL), fl. June; ibidem, Mac Kenzies island, Atherton's Station: *Thozet 325* (MEL, P), shrub, fl.; Gladstone: *White 1310* (A, BRI), small spreading tree. fl., Febr.; Keppel Bay: *Dietrich s.n.* (P), fl.; Brampton island: *Deenford s.n.* (BRI), tree, fl. Jan.; ibidem: *Burdikin Expedition 42* (MEL), fl.

MALAY PENINSULA. Singapore Island, Singapore Botanical Garden: *Nur s.n.* (K), fl. Sept., cultivated.

Remarks: Close to *P. luzoniensis* var. *papuana* in having short petioles and a sericeous corolla without, but differs from it by its larger tubuliform corolla, its rounded to obtuse leafapex and its densely puberulous lower sides of the leaves.

Since there was no type specimen mentioned by Aiton, as lectotype specimen *R. Brown s.n.* in K, from Keppel Bay has been selected.

2. P. luzoniensis (Merrill) Baehni, 1942, 365 — *Sideroxylon luzoniense* Merrill, Phil. Journ. Sc., Bot. 1, 1906, 222 — *Lucuma luzoniensis* (Merrill) H. J. Lam, 1925, 227; idem, 1927, 477 — *Fig. 3.*

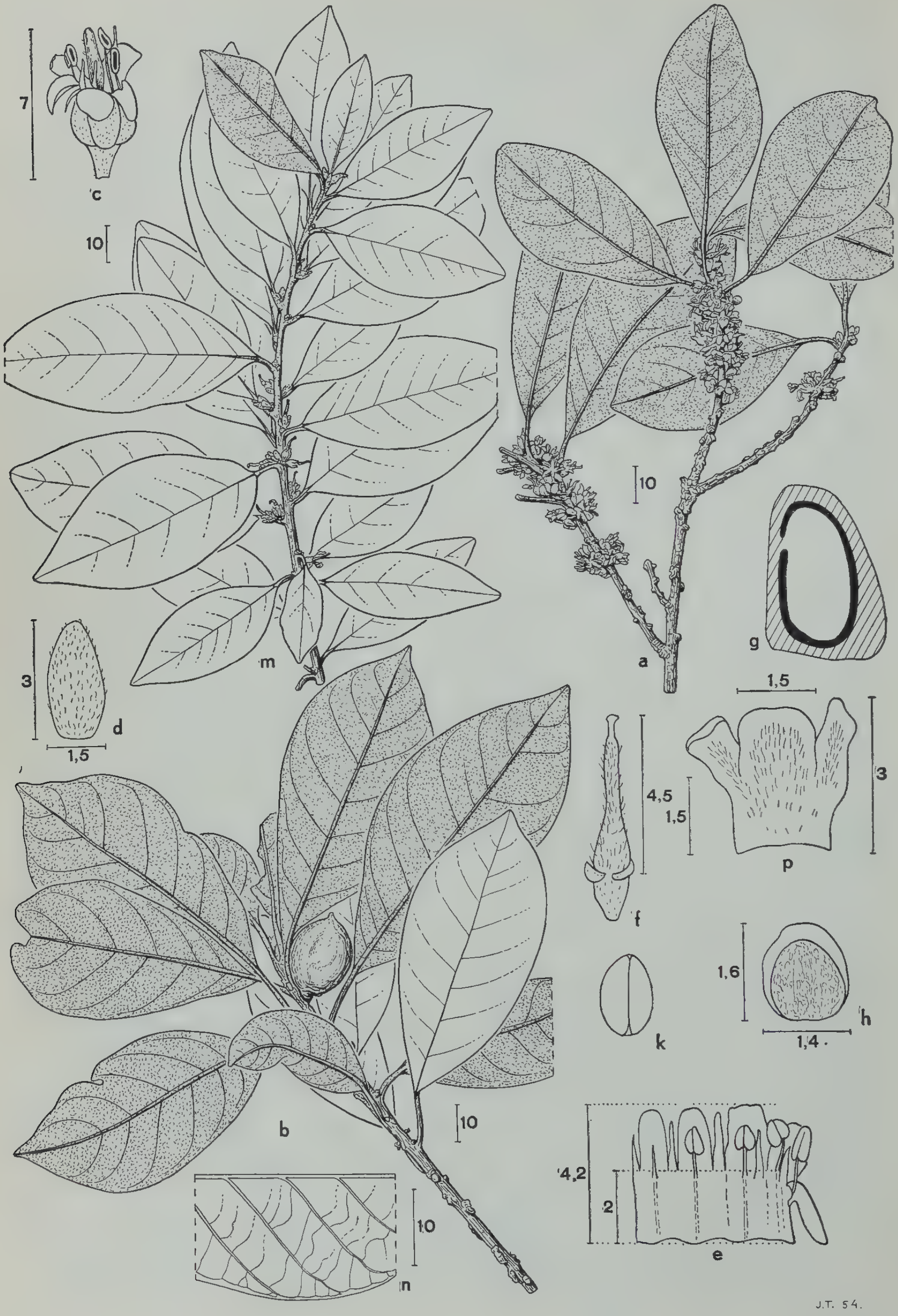
Trees, up to 30 m. *Branchlets* terete, brownish-grey when dry, tips appressedly ferruginously or sometimes golden-brownish tomentose, glabrescent; terminal buds conoid, c. 4 mm long, ferruginously or sometimes golden-brownish tomentose. *Leaves* ovate to ovate-oblong, rarely obovate-oblong, 3—17.5 by 1.8—6.5 cm, apex bluntly or acutely acuminate or acute, sometimes rounded to obtuse, base shortly decurrent, angle less than 90° or sometimes 90° or more; margins sometimes with a narrow nerve, minutely and irregularly undulate; chartaceous to thin coriaceous, glabrous, except sometimes for the midrib, greyish to brownish and nitidous above when dry, minutely appressedly ferruginously or sometimes golden-brownish tomentose, most rarely glabrescent and then dull below; midrib impressed above, prominent below, secondary nerves 6—11, ascending at an angle of 45°—60°, slightly curved, diminishing until inconspicuous or indistinctly archingly joined by some thickened tertiary nerves, impressed and sometimes inconspicuous above or almost so, prominulous below, tertiary nerves inconspicuous above, faint below, irregularly reticulate or indistinctly transverse; petioles (0.3—)0.9—2 cm long, shallowly canaliculate above, rounded below, minutely appressedly ferruginously tomentose on either side. *Flowers* in 2—6-florous clusters; almost sessile, pedicels ferruginously tomentose. *Sepals* oblong, 2.5—3 by c. 1.5 mm, apex subacute, connate at base (f. Merrill, Lam and Baehni up to $^2/_3$, 5-toothed), subcarinate, densely ferruginously pubescent without, glabrous within. *Corolla* campanulate, 4—5 mm long, glabrous or subglabrous without, glabrous within, lobes ovate, 1.5—3 by c. 1.5 mm, truncate, reflexed. *Stamens* c. 2.5 mm long, inserted in the corolla throat, filaments subulate, c. 2 mm long, attenuate at apex, anthers ovoid, c. 1 mm long, subbasifix. *Staminodes* linear, c. 0.5 mm wide at base, 2—2.5 mm long, acute. *Ovary* conoid, c. 1.5 by 1.5 mm, tapering into style, densely ferruginously pubescent, 4—5-celled, ovules inserted in upper third of cells; style rather stout, c. 3 mm long, densely ferruginously pubescent except for uppermost 0.5 mm, stigma punctiform. *Fruits* globose, c. 2 by 1.5 by 1.5 cm, almost sessile, when dry ferruginously puberulous at base and apex, with a punctiform remainder of style, sepals persistent, pericarp purple, thin; seeds 1—2, c. 1.6 by 1.4 by 1.1 cm, testa pale-yellow, nitidous, thin, scar ovate, c. 1.6 by 1.3 cm, cotyledons thick, albumen none, radicle not seen.

Type specimen: *Foxworthy 127* in PNH.

Distr.: Kangean, Bali, N. Borneo, Philippines, Sulabesi, New Guinea.

Var. **luzoniensis** — *Fig. 3, a—b.*

Leaves (5—)8—13(—17.5) cm long; petioles (0.5—)0.9—2 cm long; corolla glabrous on either side.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Type specimen: *Foxworthy 127* in PNH.

Distr.: Kangean, Bali, N. Borneo, Philippines. Sulabesi.

KANGEAN. Paliat, frequent in forest on limestone rocks, alt. 50 m: *Backer 29411* (L), buds, May.

BALI. Prapatagung, on ridges, alt. 200 m, frequent: *Becking 80* (BO, L), tree 20 m, March; NW coast, rocky, hilly country, alt. 200 m: *de Voogd 1693* (A, BO, L), tree 20 m.

BRITISH NORTH BORNEO. Tatagan, on sea shore: *Wood 2332* (= *B.N.B. For. Dep. 2332*) (SING, UC), tree 4.5 m, fl. brown, Aug.; Bod Gaya isl., Semporia, rocky country, alt. 4.5 m: *Orolfo 3798* (= *B.N.B. For. Dept. 3798*) (L), tree 7.5 m.

PHILIPPINES. Luzon, prov. Pampanga, Mt Arayat: *Clemens 16159* (UC), fl. Oct.; prov. Rizal, Antipolo, in forest on Mt Kaysipot, alt. c. 700 m: *Foxworthy 127* (K, PNH), fl. Jan.; Boso-boso: *Ramos 1059* (BO, K); ibidem: *Ramos 4663* (BO), fr. Aug.; without locality: *Ramos 1080* (FI, L, Z), fr. Aug.; Pinauisan: *Loher 12401* (UC), fl., Sept. — prov. Batangas, without loc.: *Mabesa 28034* (L, P), fl. April; Mt Lobo, south side, SW of Sili Peak, in forest on ridge, dry, rocky soil, Bo. Biga Gobo, alt. 500 m: *Sulit 15737* (BM, L, PNH), tree 7—8 m, fl. pale brown to whitish, very sweet odor, fl. May — Lubang. without loc.: *Merrill 976* (K), fl. April — Basilan, without loc.: *Miranda 17883* (P), fl. Nov.

SULABESI. Tandjungbatupan: *v. Hulstijn 227* (L).

Var. **papuana** Erlee, var. nov. — *Pag. 502* and *fig. 3 m–p.*

Leaves (2.5—)3—6(—7.5) cm long; petioles 0.3—1 cm long; corolla ferruginously sericeous without.

Type specimen: *Versteegh 67* (= *BW 48*) in L.

Distr.: New Guinea.

NEW GUINEA. Western New Guinea, distr. Hollandia, Holtekang, on steep rock country along sea, in secondary forest, alt. 2 m: *Versteegh 67* (= *BW 48*) (L), tree 12 m, fl. white, Oct. — Northeastern New Guinea, Morobe distr., Wau area, Bulowat East, on grey sandy loam, steep slopes, alt. c. 1000 m: *NGF 2521* (BRI, LAE), tree 30 m, fl.; Bulolo: *Womersley 3561* (K, L, LAE), tree in third storey, up to 15 m, fl. greenish, fr. immature, dark green, Nov.; ibidem: *Fryar NGF 4046* (K, L, LAE), tree c. 17 m, fr. immature, green.

3. **P. malaccensis** (Clarke) Baehni, 1942, 302 — *Sideroxylon malaccense* Clarke in Hooker, Fl. Brit. Ind. 3, 1882, 537; Engler & Prantl, Nat. Pfl. Fam., Nachtr. 4, 1897, 277; King & Gamble, Journ. As. Soc. Beng. 74, 1906—1909, 161; Gamble, Kew Bull. 1907, 109; Ridley, Fl. Mal. Pen. 2, 1923, 258 — *Fontbrunnea malaccensis* (Clarke) Pierre, Not. bot. Sapot., 1890, 32 — *Lucuma malaccensis* (Clarke) Dubard, 1912, 19; H. J. Lam, 1925, 231; H. J. Lam, 1927, 478; Wyatt-Smith, Manual Mal. Timber Trees 4, 1954, 16—27.

Trees, up to 40 m. *Branchlets* terete, up to 8 mm in diam., greyish to brownish when dry, densely appressed red-brownish tomentose on tips only, glabrescent; terminal buds conoid, c. 5 mm long, densely red-brownish tomentose. *Leaves* broadly obovate, or obovate to spatulate, (2—)8—22 (—28.5) by (2—)4—12(—15) cm, apex rounded to obtuse, or sometimes very

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Fig. 3. *P. luzoniensis,* var. *luzoniensis,* a. branchlet with leaves and flowers, b. branchlet with leaves and fruit, c. flower, d. outer sepal, outside, e. corolla with stamens and staminodes, f. pistillum, g. part of ovary in longitudinal section, h. seed, k. embryo. (a. from *Foxworthy 127,* b, h and k. from *Ramos 1080,* e–g. from *Mabesa 28034*). *P. luzoniensis,* var. *papuana,* m. branchlet with leaves and flowers, n. part of leaf showing secondary and tertiary nerves, p. part of corolla, outside. (from *Versteegh 67*).

shortly and bluntly acuminate, acumen 1—2 mm long; margins sometimes minutely irregularly undulate, angle of leafbase c. 90° or more, base shortly decurrent; glabrous sometimes except for the midrib, nitidous and brownish to pale greenish above, densely red-brownish tomentose below, glabrescent, sometimes except for midrib and secondary nerves and then pale below, tomentum easily rubbed off, chartaceous to thin coriaceous; midrib impressed and minutely crested above, prominent below, secondary nerves (4—)6—14(—22), ascending at an angle of 45°—70°, straight, near margins slightly curved and diminishing until inconspicuous, impressed above, prominent below, tertiary nerves transverse, distinct on either side; petioles (1.5—)2.5—4(—5.5) cm long, flattened above, rounded below, densely appressedly red-brownish tomentose on either side, glabrescent. *Flowers* in 6—11-florous clusters; pedicels 2—4 mm long, rather stout, yellowish or ferruginously to red-brownish tomentose. *Sepals* rotundate, 3 by 3 mm, apex rounded, connate at base, densely ferruginously pubescent without, glabrous within, persistent in fruit. *Corolla* c. 4.2 mm long, tubular-campanulate (f. King & Gamble absent in ♀ flowers), tube c. 3 mm long, lobes ovate, c. 1.2 by 1—1.5 mm, obtuse. *Stamens* c. 1.5 mm long, inserted in the corolla throat, filaments subulate, c. 1 mm long, anthers ovoid, c. 0.5 mm long, dorsifix. *Staminodes* 1—1.5 mm long, acute, inserted just below the corolla throat, linear-lanceolate. *Ovary* subglobose, c. 1 by 1 mm, flattened at apex, with a cupuliform disk which is about 1 mm high, densely ferruginously villous, ovules inserted in lower half of cells; style cylindrical c. 2.5 mm long, minutely ribbed, truncate, glabrous, stigma very minute. *Fruits* oblong or almost globular, 2—3.5 by 1.5—2.5 by c. 1.5 cm when dry, 2—3-seeded (or more ?), rounded and tipped with the persistent style at apex, yellowish-green or brownish, densely ferruginously to red-brownish puberulous, glabrescent, in young fruits pedicels up to c. 4 mm long and 3 mm thick; seeds ovoid, 2—2.5 by 1 by 0.8—1 cm, testa rather thin, light yellow, scar oblong, pointed at either end, plane to subconvex, c. 1.8 by 0.8 cm, cotyledons thick, radicle short, exserted, albumen none.

Type specimen: *Maingay 994* in SING.

Distr.: Malay Peninsula, Sumatra, Riouw, Lingga, Celebes, New Guinea.

MALAY PENINSULA. Pulau Penang, Batu Terenggi: *Curtis s.n.* (K, P, SING), fr. July; ibdiem, Government Hill, alt. c. 360 m: *Curtis 1452* (K, SING), tree c. 12 m, fl. & fr. March—June; without loc.: *Cantley s.n.* (K), fr. about size of that of *Olea curspea* and covered with a dense brown tomentum, fl. Nov.; without loc.: *Maingay 994* (L, P, SING), fl. Nov.; without loc., dense jungle, rocky local: *King's collector 6550* (SING), tree 12—18 m, fl. pale greenish, with a brown calyx, Sept.; Waterfall, Taiping (?), alt. 60 m: *Wray Jr 136* (SING), juv. fr. — Selangor, Weld Hill reserve, Kuala Lumpur: *Hamid C. F. 585* (SING), juv. fr. March; ibidem: *Hashim C. F. 514* (= *S. F. 1855*) (SING), fl. March; ibidem: *Murdock s.n.* (SING); ibidem: *Hamid C. F. 17* (SING), fl. — Johore, Singapore, NE end of Mac Ritchie reservoir: *Sinclair S. F. s.n.* (L), tree c. 21 m, fr. Jan.; ibidem, Garden jungle, near small waterhouse at NW and of Mac Ritchie reservoir: *Corner s.n.* (SING), forest tree with stilt roots; jungle in garden near Director's home: *Sulit s.n.* (SING), young tree; without loc.: *Cantley 106* (SING), fl. Aug.; Kranji: *Mat s.n.* (SING), fr.; Schlar (?): *Mat 6499* (SING), fr.; Sungai Kayu area, Mawai-Jemaluang road, in Dryobalanops forest, on hillock, low alt.: *Corner S.F. 29468* (A, L, SING), fl. & fr. May; Perak, alt. 90 m: *Wray Jr 3404* (K), large tree, fl. May; Larut Perak, in open old jungle, rocky locality, alt. 150—

300 m: *King's collector 3733* (K), tree 18—21 m, fr. greyish green, yellow when ripe, Jan.

SUMATRA. North Sumatra, Siboga and surrounding country, Baroes, alt. c. 15 m: *NIFS bb 31574* (L); ibidem, upland plain of Toba, alt. c. 900 m: *NIFS bb 5698* (K, L); Loeboek, Sikaping: *NIFS bb 3961* (L), fr. July — South Sumatra, Palembang: *Grashoff 1023* (L).

RIOUW. Karimon, Pangke, on clayey soil, hilly country, alt. 3 m: *NIFS bb 17228* (= *Jahja 2*) (BO, L), tree 27 m; uplands of Indragiri, Muara Serangge, alt. c. 40 m: *NIFS bb 30136* (A, L); Danau Mengkoeang: *NIFS bb 27538* (L), April — Pulau Kedongdong, Kuantan, alt. c. 100 m: *NIFS bb 24820* (L), June.

LINGGA. Pulau Singkep, S. Pulak, on sandy clay, in old forest, c. 25 m: *NIFS bb 4032* (= *Amat 7*) (BO, L), tree 25 m.

CELEBES. Central Celebes, Malili, Kawata, alt. c. 250 m: *Reppie 238* (BO, L), fl. & fr. brown, Jan.; ibidem, alt. 250 m: *Waturandang 284* (BO, L), fl. & fr. yellow-green, Febr.; ibidem, clayey soil, alt. c. 250 m, steep country, old forest: *Waturandang 98* (BO, L), tree c. 20 m, fl. bud green, fl. white, fr., Oct.; ibidem, Usu: *Reppie 423* (A, BO. L), fl. bud dark red, fr., Oct.; ibidem, on clayey soil, steep country, in old forest: *Waturandang 72* (A, BO, L), tree c. 40 m, fr. young, green, Jan.

NEW GUINEA. Western New Guinea, Japen Island, Seroei, Marattu, alt. c. 370 m: *NIFS bb 30410* (L, SING).

Remarks: This species is easily to distinguish by its broad, obovate leaves, its densely reddish-brown tomentum on tips of branchlets, younger leaves and fruits. The tomentum on leaves and fruits is except in a few cases easily rubbed off.

It is a fairly common species of lowland forest and on ridge tops up to 360 m.

4. P. novo-caledonica (Engl.) Baehni, 1942, 297 — *Lucuma novo-caledonica* Engler, Bot. Jahrb. 12, 1890, 516; Engler & Prantl, Nat. Pfl. Fam. 4, 1897, 142; Dubard, 1912, 21; Guillaumin & Beauvisage, Ann. soc. bot. Lyon 38, 1913, 101 — *Sideroxylon novo-caledonicum* (Engl.) Engl., Engler & Prantl, Nat. Pfl. Fam., Nachtr. 4, 1, 1897, 277 — *Lucuma ? deplanchei* Baillon, Bull. Soc. linn. Paris 2, 1891, 894 — *Pichonia elliptica* Pierre, Not. bot. Sapot. 1890, 23 — *Rhamnoluma novo-caledonica* (Engl.) Baillon, Hist. Pl. 11, 1891, 288.

Small trees, up to 7 m (f. Baehni a shrub). *Branchlets* terete, greyish when dry, appressedly ferruginously tomentose at tips only, glabrescent. *Leaves* subopposite or scattered along the branchlets, orbiculate or ovate-oblong to oblong, 1—7.5 by 0.5—4 cm, apex rounded, angle of leafbase 90° or more; coriaceous, glabrous on either side and nitidous above, dull below, or ferruginously tomentose on midrib below; midrib impressed above, prominent below, secondary nerves (3—)6—9, ascending at an angle of 50°—65°, straight, reticulate near margins, impressed above, hardly visible below, tertiary nerves minutely reticulate, inconspicuous above, faint below; petioles 3—9 mm, flattened above, rounded below, appressedly ferruginously tomentose, glabrescent. *Flowers* solitary or in 2—3-flowered clusters, axillary; pedicels 5 mm long and rather stout or 10—16 mm long and slender, ferruginously tomentose. *Sepals* ovate, 3—5 by 2.5—3 mm, subacute, connate at base, densely ferruginously tomentose without, glabrous within, inner ones with membranous fimbriate margins, persistent in fruit. *Corolla* campanulate, 4—9(—15) mm long, tube 1—3 mm long, lobes ovate to oblong, 3—6 by 2—3.5 mm, apex obtuse, sometimes outwardly recurved. *Stamens* 3.5—9 mm long, inserted just above the corolla throat, filaments linear, 3—8 mm long, recurved at apex, widened at base, attenuate towards tips, anthers ovoid, 1—2.5 mm long, subdorsifix, penicillate at apex. *Staminodes* lanceolate, 2—5 mm long, inserted in the corolla throat, widened at base and c. 1.5 mm broad. *Ovary* conoid, 1.5—3 by 1—2 mm, densely ferruginously villous, obscurely 5-ribbed, ovules inserted in upper half of cells (f. Baillon in the middle of the cells); style filiform, 3.5—6 mm (or longer), glabrous, apex attenuate, stigmas inconspicuous. *Fruits* gobose to oblong, c. 2 by 1.5 by 1 cm when dry, glabrous, dark purple, style persistent, pericarp thin; seeds solitary, testa thin, pale yellow, scar covering more than half of the seed, brownish, cotyledons thick, albumen none, radicle not exserted.

Type specimen: *Deplanche 442* in B.

Distr.: New Caledonia.

Var. **novo-caledonica.**

Leaves 1—6 by 0.5—4 cm; pedicels 1—1.6 cm long; corolla 0.9 cm long.

Type specimen: *Deplanche 442* in B.

Distr.: New Caledonia.

New Caledonia. Pum, Cape Tonnerre: *Deplanche 442* (A, FI, L), fl. & fr.; ibidem, in forest above Ouroué near mouth of Dothio river: *Balansa 3647* (K, P), tree 6 m, fl. pink, May; ibidem, on volcanic hills: *Balansa 3460* (P), tree 6 m, fl. pink; Imboicuvin, near Pum island: *Vieillard 2903* (P), fl.; Dothio: *Baumann 14372* (Z), fl. June; ibidem: *Baumann 14360* (Z), fl.

Remarks: Similar to *P. sericea* regarding the length of the petioles and the shape of the leaves, but very differing in floral structure by having longer pedicels and a campanulate corolla.

Var. **lecomtei** (Guill.) Erlee, nov. stat. — *Pouteria lecomtei* (Guill.) Baehni, 1942, 288 — *Lucuma lecomtei* Guill., Bull. Mus. Hist. nat. Paris, sér. 2, 6, 1934, 458, *nomen nudum*; Guill. in Lecomte, Not. Syst. 5, 1935, 15, *descr.*

Leaves 4—7.5 by 2—3.5 cm; pedicels c. 5 mm long; corolla c. 0.4 cm long.

Type specimen: *Franc 2050* in P.

Distr.: New Caledonia.

New Caledonia. Nouméa, along banks of Dombéa river: *Franc 464* (L, P), shrub, fl. July; Yaté: *Franc 2050* (A, P, UC), tree 1.5—7 m, fl. June; in dense forest on serpentine slope in valley of the lower Kalouéhola, alt. c. 50 m: *Hürlimann 1668* (Z), tree 6 m; Artillery Point, near camp of No (?): *Le Rat & Le Rat 144* (P), fl. March; without loc.: *Baumann 1394* (Z), fl.

Remarks: This variety differs from the type-variety by its larger leaves and denser ferruginously pubescent petioles, but especially by its shorter and rather stout pedicels (c. 5 mm long), and smaller dimensions of the flower elements. Close to *P. balansana* especially in leaf-characters, but different from it in having smaller flowers (in *P. balansana* the sepals and corolla are 5.5—7.5(—1) cm and 7.5—9 mm long respectively, in *P. novo-caledonica*, var. *lecomtei* they are 3 and 4 mm long respectively.

5. **P. balansana** (Pierre) Baehni, 1942, 317, syn. et descr. p.p., (sphalm. "*balanseana*") — *Lucuma ? balansana* Pierre, Not. bot. Sapot., 1890, 22; Guillaumin, Ann. Mus. col. Mars. 19, 1911, 186, (sphalm. "*balanseana*"); Däniker, Vierteljahrsschr. Nat. Ges. Zürich 78, 1933, 351, (sphalm. "*balanseana*") — *Pichonia balansana* (Pierre) Pierre, l. c. 23 — *Chrysophyllum*

? pyriforme Baillon, Bull. Soc. linn. Paris 2, 1890, 899 — *Epiluma pyriformis* (Baillon) Baillon, Hist. Pl. 11, 1892, 287; Engler & Prantl, Nat. Pfl. Fam., Nachtr. 4, 1, 1897, 275 — *Lucuma pyriformis* (Baillon) Dubard, Ann. Mus. col. Mars. 20, 1912, 20.

Tall trees. Branchlets terete, up to 8 mm in diam., glabrous, brownish to greyish when dry. *Leaves* crowded towards tips of branchlets, broadly obovate, sometimes ovate to suboblong, (3—)5—8.5(—10.5) by (2—)2.5—6(—6.5) cm, rounded to obtuse at apex, sometimes indistinctly and bluntly acuminate, angle of leafbase less than 90° or more, shortly decurrent along petiole; glabrous on either side, nitidous and brownish to greenish olivaceous above, somewhat dull below, thin coriaceous; midrib impressed above, prominent below, secondary nerves 6—11, ascending at an angle of 45°—60°, reticulate near margins, tertiary nerves minutely reticulate, faint on either side; petioles 1—2 cm long, flattened to broadly canaliculate above, rounded below, glabrous. *Flowers* in 10—15-florous clusters in axils of leaves; pedicels 8—13 mm long, with scattered ferruginous hairs and 2 or 3 bracteoles at base. *Sepals* 5, connate at base, persistent in fruit, ovate to suborbiculate, sometimes oblong, c. 4 by 2—4 mm, rounded to obtuse at apex, outside with scattered ferruginous sericeous hairs, but densely so towards apex, glabrous within. *Corolla* c. 6 mm long, tube c. 2 mm, lobes 7 or 8, ovate, c. 4 by 2—2.5 mm, apex rounded, outwardly curved, with scattered ferruginous sericeous hairs at the outside, glabrous within (f. Baehni: corolla hairy on margins and on the throat inside). *Stamens* 7 or 8, c. 7 mm long, filaments subulate, attenuate at tips, 5—6 mm long, anthers oblong, c. 2.5 mm long, penicillate at apex, subbasifix. *Staminodes* 1—3(—7) or sometimes absent, petaloid, c. 2 mm long, widened at base (f. Pierre staminodes dentiform, very short). *Ovary* conoid, c. 2 by 2.5 mm, densely ferruginously villous, (4—)5-celled, ovules inserted in upper half of cells; style cylindrical, attenuate at apex, furrowed, glabrous. *Fruits* obliquely subovoid, sometimes oblong, 4—6 by 3—4 cm, glabrous, pericarp rather thick, becoming very hard when dry; seeds solitary, subovoid, testa thick, scar covering nearly the whole surface of seed, leaving a narrow shining part, which is c. 1 mm broad at apex and c. 4 mm at base, cotyledons ovate, thick, albumen none, radicle not seen.

Type specimen: *Balansa 2371* in P.

Vern. name: messup.

Distr.: New Caledonia.

New Caledonia. Lifu, in forests: *Balansa 2321* (P), tree 10 m, fr. July; ibidem: *Sarasin 758* (P), fl.; ibidem, Thosip, in forest on terrace along river: *Däniker 2488a* (Z), high tree, fr. Nov. — Maré, Netche: *Däniker 2488* (Z), high tree, fl. greenish red, Aug.; ibidem, in forest: *Baumann 14549* (Z), fr. July; ibidem: *Baumann 14713* (Z) — without known loc.: *Balansa 2371* (P), fl.

Remarks: Baehni, 1942, unfortunately united *Sideroxylon balansanum* Pierre and *Lucuma balansana* Pierre to *Pouteria balansana* but the two species are quite distinctly to separate and the former represents a *Planchonella,* the other a *Pouteria* sensu Eyma.

6. **P. calomeris** (Baillon) Baehni, 1942, 323 — *Chrysophyllum balansae* Baillon, Bull. Soc. linn. Paris 2, 1891, 901, *nomen err.* — *Chrysophyllum calomeris* Baillon ex Guillaumin, Ann. Mus. col. Mars. 19, 1911, 188, nomen

alt. — *Sebertia calomeris* (Baillon) Däniker, Vierteljahrsschr. Naturf. Ges. Zürich 78, 1933, 359.

Shrubs, 1—6 m, (f. Pancher & Sebert a high forest tree). Branchlets terete, 6—9 mm in diam., brownish, wrinkled when dry, glabrous except for uppermost young parts which are covered with scattered reddish-brown hairs, leaf-scars numerous, rather prominent. Leaves crowded at tips of branchlets, ovate-oblong to oblong, sometimes subobovate, 3.5—10(—12) by 2—5 cm, apex rounded, angle of leafbase 90° or more, broadly acute; coriaceous, glabrous on either side, sometimes except for base of midrib below; midrib much impressed above, very prominent below, secondary nerves 9—14(—18), ascending at an angle of 60°—70°, straight, near margins reticulate or indistinctly archingly joined, impressed but sometimes hardly visible above, prominulous below, tertiary nerves minutely reticulate in the young leaves, sublaxly reticulate in the mature ones, inconspicuous above, faint below; petioles 1—2(—2.5) cm long, canaliculate above, rounded below, with scattered reddish-brown hairs. *Flowers* solitary or in 2- or 3-flowered clusters, axillary; pedicels up to 5 mm long, c. 2 mm in diam., rather stout, with scattered reddish-brown hairs, bracteoles 2—4, spirally arranged underneath the sepal spiral and continuing into it, ovate to lanceolate, 2—4 mm by c. 2 mm. *Calyx* persistent in fruit, *sepals* 5, connate at base, oblong, 5.5—7.5(—10) by 3—4 mm, apex rounded to obtuse, reddish-brown puberulous without, glabrous within. *Corolla* campanulate, 7.5—9 mm long, lobes 5—7, ovate 5.5—6 by 3—3.5 mm, truncate. *Stamens* 5—7, filaments c. 6 mm long, subulate or more or less linear, inserted near base of corolla tube and connate with it up to 3 mm from base, anthers ovoid, c. 4 mm long, subbasifix, pointed at apex. *Staminodes* 5—7, lanceolate, sometimes petaloid, 5.5—6 by 1.5—2.5 mm, apex acute or obtuse. *Pistillum* c. 7.5 mm long, c. 2.5 mm in diam., densely covered with appressed ferruginous hairs except for the uppermost third, ovary oblong, 5-or 6-celled, ovules inserted in lower half of cells; style cylindrical, sericeous at base, c. 6 mm long, glabrous part minutely ribbed, stigma inconspicuous. *Fruits* ovoid, 2—4 by 1.2—2 by 0.8—1.6 cm when dry, one-seeded, apex tipped with the persistent style, pericarp purple, glabrous except on base and tip; seeds 1.5—3.2 by 0.7—1.4 by 1.2—1.6 cm, subcarinate at back, pointed at base, rounded at apex, testa thin, brownish, scar pale, covering half of surface, cotyledons thick, albumen none, radicle not seen.

Lectotype specimen: *Balansa 1830a* in P.

Distr.: New Caledonia.

New Caledonia. Messincoué, near Port Bouguet, on lateritic hills: *Balansa 1830* (P), shrub, fr. Sept.; near mouth of Dothio, on lateritic hills: *Balansa 3043* (P), shrub 1—2 m high, fr. pulpy, brownish black, Sept.; Canala, on lateritic soil: *Balansa 1830b* (P), shrub 2—3 m, fr. pulpy, black, June; banks of Ngoin, 8 km from its mouth: *Balansa 1830a* (P), fr. Oct.; without loc.: *Vieillard 193* (P), tree, fl.; ibidem: *Deplanche 306* (P); in valley which is coming from Mt Humboldt and the Kalouéla confluent: *Däniker 586* (Z), fr. Nov.; N. of Kouébuni, in semi-xerophylous forest, on rocky slope exposed NE of hills, alt. c. 110 m: *Hürlimann 587* (Z), shrub 2 m, fl. reddish-write, fl. Jan.; ibidem: *Hürlimann 579* (Z), tree 5 m, fl. pink, fl. Jan.; brush-wood on alluvian sandstone in valley of the Fausse-Yaté, near bridge, alt. c. 20 m: *Hürlimann 672* (Z), shrub 2 m, leaves bicolorous, fl. Jan.; mesophylous forest along rocky bank of a branch of the Kalouéhola, coming from Mt Humboldt, c. 100 m alt.: *Hürlimann 1724* (Z), slender tree up to 6 m, buds brownish puberulous.

Remarks: According to Guillaumin, Bull. Soc. bot. Fr. 89, 1942, 223, Baillon after recognising his mistake in publishing a second *Chrysophyllum balansae* Baillon (l. c., p. 901) altered the latter specific epithet in *Chrysophyllum calomeris* based on *Balansa 3043, 1830a* and *1830b*. The type specimen of *Chrysophyllum balansae* Baillon, the first one published by Baillon bearing this specific epithet (l. c., p. 900) is *Vieillard 18*.

7. **P. occidentalis** (H. J. Lam) Baehni, 1942, 344 — *Lucuma occidentalis* H. J. Lam, 1925, 228, f. 62; idem, 1927, 477.

Large trees. Branchlets terete, c. 7—10 mm in diam., densely ferruginously tomentose, glabrescent. *Leaves* crowded towards tips of branchlets, obovate, 33—47 by 9.5—16.5 cm, apex shortly and obtusely or acutely acuminate, acumen c. 2—10 mm long, base truncate to subcordate, angle of leafbase more than 90°, leaves gradually narrowing over a distance of about 5—6 cm from base; thin coriaceous, glabrous on either side, nitidous above, dull below; midrib strongly impressed and sometimes minutely crested above, strongly prominent below, secondary nerves 19—22(—24), ascending at an angle of 45°—70°, straight, abruptly curved near margins and diminishing until inconspicuous, or reticulate and indistinctly archingly joined by some thickened tertiary nerves, impressed above, prominent below, tertiary nerves transverse, impressed above, prominulous below; petioles c. 1(—1.3) cm long, broadly impressed above, rounded below, densely ferruginously pubescent on either side (f. Lam only underside hairy). *Flowers* in 15—20-flowered clusters on axillary tuberculae below the leaves; pedicels 1—2.5(—3) cm long, densely ferruginously tomentose. *Sepals* 5, connate at base, deltoid, 4—4.5 by c. 3.5 mm, acute, outer ones ferruginously pubescent without, glabrous within, inner ones sparsely silvery pubescent without and towards apex with ferruginous hairs, glabrous within. *Corolla* in bud c. 5 mm long, tube c. 1 mm long, lobes 5—7, ovate (f. Lam sometimes sepaloid), c. 4.5 by 3 mm, obtuse. *Stamens* 5—7, inserted in base of corolla tube, c. 4 mm long, filaments slender, adnate to whole length of tube, subulate, apex attenuate and in bud outwardly curved, c. 2.5 mm long, anthers oblong, c. 1.5 mm long, apex pointed, dorsifix. *Staminodes* 5 or 6 (sometimes 7?), lanceolate, c. 3.5 mm, acuminate, widened at base, c. 1.5 mm wide. *Pistillum* c. 7 mm long (f. Lam surrounded by a thick glabrous disk), densely ferruginously villous except for the very short style, which is c. 0.5 mm long, ovary 5- or 6-celled, ovules attached in upper half of cells, stigma inconspicuous. *Fruits* globose, sometimes obovoid, 2.5—2.8 by 1.7—2.3 by c. 1.7 cm when dry, 1-seeded, pericarp purple; seeds ovoid to obovoid, c. 1.7 by 1.5 by 1.2 cm, testa thin, hardly separable from pericarp, brownish, scar nearly occupying whole surface of seed, leaving a small dorsal, dark brown shining part, which is c. 1.5 by 1 cm large, inner side of testa dark, papillose, cotyledons globose, outer side with papillae which correspond with those of the testa (f. Lam), albumen none. Calyx persistent in fruit and pedicel thick, c. 15 by 5 mm, glabrous.

Type specimen: *Beguin 2264* in BO.

Vern. name: midjioeng (Tobela), parga ma modjioi (Galela).

Distr.: Halmahera.

Halmahera. W. Pitu, in forest, alt. c. 100 m: *Beguin 2264* (BO, L), tree 37 m, rather straight, immature, light green, Nov.; Soa, Tabaru, in forest, alt. c. 60 m: *Beguin 2118* (BO, L), tree 32 m, fl. light green, Aug.

8. **P. unmackiana** (Bailey) Erlee, nov. comb. — *Lucuma unmackiana* Bailey, Dept. Agric. Brisbane Bot. Bull. 4, 1891, 12; idem, Queensland Fl. 3, 1900, 954 — *Chrysophyllum sp.* ?, Baehni, 1942, 427 — *Fig. 4.*

Medium sized trees. Branchlets terete, striate, greyish when dry, brownish to greyish tomentose on tips only, glabrescent; terminal buds conoid, c. 3 mm long, densely ferruginously tomentose. *Leaves* scattered along the branchlets, broad-ovate to broad-obovate, sometimes oblong, 2—7.5 by 1.2—5.5 cm, short and acute acuminate, acumen up to 4 mm long, sometimes apex rounded to obtuse, angle of leaf-base less than 90° or more, base shortly decurrent; glabrous and nitidous above, brownish to greyish puberulous, sometimes glabrescent below, thin-coriaceous; midrib impressed above, prominent below, secondary nerves 4—6(—8), ascending at an angle of about 40°—50°, slightly curved, near the margins bifurcate or diminishing until inconspicuous, tertiary nerves nearly inconspicuous on either side, parallel to secondary nerves, but near margins subtransverse; petioles 3—5 mm long, flat to slightly convex above, rounded below, ferruginously or greyish tomentose on either side. *Flowers* in 3- or 4(-5)-florous clusters, axillary; pedicels c. 1 mm long or less. *Sepals* 4 or 5, connate at base, outer ones broad-ovate, c. 6 by 5.5 mm, acute, inner ones ovate, c. 9 by 6 mm, acuminate, acumen long, margins glabrous and minutely ciliate, apex inwardly curved, ferruginously sericeous without, the inside with long ferruginous sericeous hairs in the centre only (f. Bailey glabrous within). *Corolla* urceolate, c. 9 mm long, tube c. 6.5 mm long, lobes 4 or 5, broad-ovate, c. 2.5 by 2.5 mm, rounded to obtuse, margins minutely ciliate. *Stamens* 4 or 5, c. 7 mm long, inserted in base of tube, filaments slender, adnate to tube up to 4 mm from base, c. 1.5 mm long, subulate, attenuate at tips, anthers oblong, c. 1.5 mm long, basifix. *Staminodes* linear, c. 2 mm long. *Ovary* subglobose, c. 3 by 2 mm, top flattened, densely ferruginously villous, ovules inserted in the middle of the cells; style cylindrical, slender, c. 8 mm long, attenuate at apex, glabrous, stigma very minute. *Fruits* sessile, ovoid to pyriform, 3—3.5 by 2—2.5 by c. 1.5 cm when dry, densely ferruginously hispidulous, exocarp purple, 1—4-celled, with sometimes one, more rarely with three maturing seeds, testa shining, c. 3 mm thick, scar broad, whitish, embryo not seen.

Type specimen: *Jacobson s.n.* in BRI.

Distr.: Australia (Queensland).

AUSTRALIA. Queensland, Cape York Peninsula, Musgrave E. T. Station: *Jacobson s.n.* (A, BRI, K, MEL), fl. & fr. Aug.; Schramm Creek, branch of Batavia river: *Whitehouse s.n.* (BRI).

9. **P. xylocarpa** White, Journ. Arn. Arb. 31, 1950, 111.

Lofty trees, up to 40 m high. Branchlets terete, brownish when dry,

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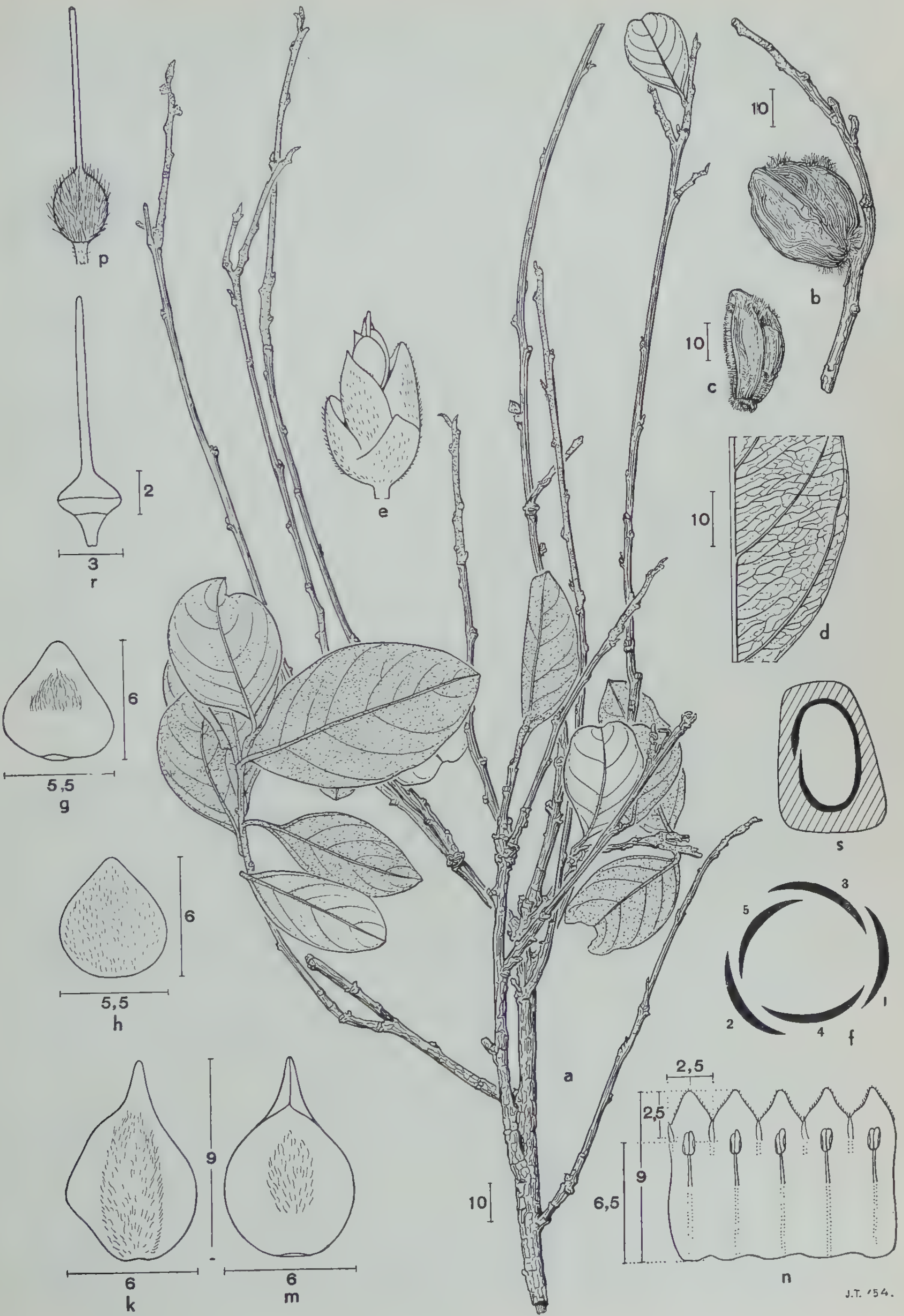
Fig. 4. *P. unmackiana*, a. branchlets with leaves, b. idem, with fruit, c. fruit, d. part of leaf showing secondary and tertiary nerves, e. flower, f. diagram of calyx, g. outer sepal, inside, h. outer sepal, outside, k. inner sepal, outside, m. inner sepal, inside, n. corolla with stamens and staminodes, p. and r. pistillum, s. part of ovary with ovulum. (from *Whitehouse s.n.*).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greyish to brownish puberulous at tips only, glabrescent. *Leaves* obovate or ovate to oblong, 10—25.5 by 5.5—10 cm, apex bluntly acuminate, acumen c. 10 mm long, rarely rounded to obtuse, angle of leafbase 90° or more, base shortly decurrent; olivaceous to brown-olivaceous above, somewhat dull below, juvenile leaves densely sericeous on either side, mature leaves glabrous on either side, thin chartaceous; midrib impressed above, strongly prominent below, sometimes reddish when dry, secondary nerves 7—12, ascending at an angle of 60°—70°, straight, near margins curved and diminishing until inconspicuous or sometimes indistinctly archingly joined by some thickened tertiary nerves, prominulous on either side, tertiary nerves transverse, prominulous on either side; petioles 2.5—4 cm long, flattened above, rounded below, glabrous. *Flowers* in 3—7-flowered clusters, axillary; pedicels slender, c. 5 mm long, with scattered brown hairs. *Sepals* orbiculate to ovate, c. 2 by 1.5 mm, rounded at apex, connate at base, with scattered brown hairs without, glabrous within. *Corolla* in bud c. 1.5 mm long, whitish, tube c. 1 mm, lobes orbiculate, c. 0.5 by 0.5 mm, apex rounded. *Stamens* inserted just below the throat of corolla, c. 0.6 mm long, filaments linear, anthers unknown. *Staminodes* linear-lanceolate, c. 0.6 mm long. *Ovary* subglobose, c. 0.5 by 0.5 mm, densely covered with whitish hairs, ovules inserted in lower half of cells; style glabrous, cylindrical, rather stout, c. 1 mm long, minutely ribbed, stigmas distinct. *Fruits* subglobose, shallowly but distinctly 5—10-lobed, 4.5—5 by 5—6 cm, glabrous, pericarp thick, becoming very hard when dry, pedicel c. 7 mm in diam.; seeds (2—)5, c. 2.5—3 by 1.5—1.7 by c. 1 cm, carinate, testa rather thick, yellowish, scar oblong, acute at both ends, c. 2.5 cm by 6—7 mm, cotyledons rather thick, albumen none, radicle exserted, c. 2 mm long.

Type specimen: *Mair NGF 1883* in BRI.

Vern. name: e-orie (Buin island).

Distr.: Bismarck Archipelago and Solomon Islands.

BISMARCK ARCHIPELAGO. New Britain, Namtambu, Broken Bay, in rain forest on deep volcanic soil: *Mair NGF 1883* (A, BRI, K, LAE), tree c. 40 m, fl. small, calyx green, corolla white, fl. & fr. May.

SOLOMON ISLANDS. Bougainville, Siwai: *Waterhouse 206* (K), littoral tree, fl. Jan. — Buin: Kugu-maru, in rain forest, alt. 150 m: *Kajewski 1892* (A), large tree, up to 20 m, fr. globular, seeds brown.

Remarks: *P. xylocarpa* White and *P. wakere* (Pancher & Sebert) Baehni are very much alike in fruit characters, but the former is distinguished by its very small sparsely pubescent greenish calyces and corollas and the latter by its firmly coriaceous leaves. *P. xylocarpa* is also closely allied to *P. maclayana* (F. Mueller) Baehni especially in leaf characters but differs from the latter by the shape of its fruits (*P. xylocarpa* globose, tapering at base, *P. maclayana* depressed-globose).

10. P. lauterbachiana (H. J. Lam) Baehni, 1942, 314 — *Planchonella lauterbachiana* H. J. Lam, 1932, 564, t. 121 — *Beccariella schlechteri* Krause, Engl. Bot. Jahrb. 58, 1923, 483.

Large trees, up to 25 m. Branchlets terete, tips brownish when dry, sparsely brownish or yellowish puberulous, glabrescent. *Leaves* subopposite, ovate to oblong, sometimes obovate, rarely lanceolate, (4.5—)10—20 by (3.3—)6—8 cm, apex acuminate, sometimes very shortly and obtusely so, acumen 5—10 mm long, base cuneate, angle less than 90° or more, obliquely and shortly decurrent; subcoriaceous, glabrous except for a few scattered brownish to greyish hairs on midrib on the lower side, nitidous above, somewhat dull below; midrib grooved above and minutely crested, prominent below, secondary nerves (6—)8—10(—13), ascending at an angle of 45°—60°, curved, reticulate near margin, sometimes archingly joined by some thickened tertiary nerves, impressed and nearly inconspicuous above, prominulous below, tertiary nerves inconspicuous above, faint below, minutely reticulate, near margins with some stouter transverse nerves; petioles (0.8—)1—1.5 cm long, glabrous, canaliculate above, rounded below. *Flowers* in 6—11-flowered axillary clusters; pedicels 2—4 mm long, rather stout, yellowish appressedly tomentose. *Sepals* orbicular to ovate, 2.5—3 by 2—2.5 mm, connate at base, apex rounded to obtuse, outer ones subcoriaceous, inner ones with membranous margins, yellowish appressedly tomentose without, glabrous within. *Corolla* green or white, c. 5 mm long, tube c. 1 mm long, lobes ovate, c. 4 by 2 mm, obtuse. *Stamens* inserted in the corolla throat, c. 3 mm long, filaments slender, c. 1.5 mm long, subulate, apex attenuate, anthers ovoid, c. 1.8 mm long, dorsifix. *Staminodes* lancolate, subacute, widened at base, c. 3 mm long. *Ovary* conoid, c. 1.5 by 1 mm, glabrous, obscurely 5-lobed, ovules inserted in the middle of the cells; style glabrous, cylindrical, apex attenuate, stigma distinct. *Fruits* subobliquely oblong, 3—5.5 by 0.8—1.8 by 0.7—1.4 cm when dry, one-seeded, pointed at apex, narrowed at base, pericarp purple, thin, glabrous, pedicels c. 3 mm long, sepals persistent, testa thin, nitidous, scar occupying slightly more than half of the seed, up to 4.2 by 2.5 cm, cotyledons oblong, thick, albumen none, radicle very small, punctiform.

Type specimen: *Schlechter 17933* in B.

Lectotype specimen: *Schlechter 17933* in P.

Vern. names: aa (Skou dialect, New Guinea), oelaai, kemtaai (Atam dialect, New Guinea).

Distr.: Moluccas, New Guinea, Bismarck Archipelago.

HALMAHERA. Weda, Tiloppe, alt. c. 25 m: *NIFS bb 24871* (L, SING).

NEW GUINEA. Western New Guinea, district Manokwari, Ransiki, Warnapi, flat clayey ground, primary forest, alt. c. 20 m: *Kostermans 389* (= *NIFS bb 33563*) (BO, L, PNH, SING), tree c. 25 m, fl. bud brown, fl. white, Sept.; ibidem, sandy clay, primary forest, alt. c. 10 m: *Kostermans 2862* (= *NIFS bb 33681*) (BO, L), tree 20 m, fl. green, fr. green with brown-black stone, Sept.; district Hollandia, Holtekang, primary forest: *BW 1561* (L), tree 18 m, fl. Oct. — Southeastern New Guinea, alt. c. 1000 m, secondary forest: *Carr 15938* (SING), tree 15 m, fl. creamy white, March; ibidem, alt., secondary forest: *Carr 16057* (SING), tree 15 m, young fr. March.

NEW BRITAIN. Jacquinot Bay: *NGF 147* (LAE), Jan.

Remarks: Distinguishable by its subopposite leaves along the branches and its oblong slightly oblique fruits. Very close to *P. solomonensis* especially in leaf and floral characters but differing in the shape of its fruit and other fruit structuree.

The specific epithet *lauterbachiana* has been used by Lam, 1932, when, transferring *Sideroxylon schlechteri* Krause to *Planchonella*, the combination *Planchonella schlechteri* (Krause) H. J. Lam was formed, and the transfer of *Beccariella schlechteri* Krause to *Planchonella* at the same time forced him to choose the new epithet *lauterbachiana*. Baehni when transferring the whole genus *Planchonella* to *Pouteria* subsequently maintained the newly chosen specific epithet *lauterbachiana* for his *Pouteria lauterbachiana* and the specific epithet *schlechteri* for his *Pouteria schlechteri.*

In van Royen's treatment of *Planchonella* the last named species is regarded as a *Planchonella,* viz. *Pl. schlechteri* (Krause) H. J. Lam. As, however, the combination *Pouteria schlechteri* (Krause) Baehni, had been used already, though this species appeared to represent *Planchonella schlechteri* (Krause) H. J. Lam, based on *Sideroxylon schlechteri* Krause, it was according to the rules of nomenclature not allowed to replace the combination *Pouteria lauterbachiana* (Krause) H. J. Lam, based on *Beccariella schlechteri* Krause by *Pouteria schlechteri* (Krause) nov. comb., and therefore the existing combination *Pouteria lauterbachiana* (Krause) H. J. Lam is maintained.

As the type specimen has been burnt during the 1943 bombardment of the Berlin Herbarium a new one has been chosen out of the other specimens of the same number, viz. the one in Paris.

11. P. ? longipes (Baillon) Baehni, 1942, 330 — *Chrysophyllum longipes* Baillon, Bull. Soc. linn. Paris 2, 1891, 900; Guillaumin, Ann. Mus. col. Marseille 19, 1911, 185 — *Planchonella linguaeformis* Pierre, Not. bot. Sapot., 1890, 36, *nomen.*

Trees, up to 10 m. Branchlets terete, up to 6 mm in diam., glabrous except for uppermost parts which are minutely appressedly red-brownish puberulous, greyish and wrinkled when dry, leaf-scars numerous and rather big. *Leaves* crowded towards tips of branchlets, spatulate, oblanceolate to obovate-lanceolate, (7—)12—17.5 by 2.5—5.5 cm, apex rounded to obtuse, angle of leaf-base less than 90°, base tapering over a long distance into petiole; thin-coriaceous, glabrous, nitidous and olivaceous above, minutely appressedly red-brownish puberulous below; midrib impressed and minutely crested above, prominent below, secondary nerves (5—)8—12, ascending at an angle of 40°—50°, curved, near margins reticulate or diminishing until inconspicuous, sometimes archingly joined, impressed above, prominulous below, tertiary nerves reticulate, faint on either side; petioles 4—5.5(—7) cm long, flat and sometimes narrowly crested above, rounded below, minutely appressedly red-brownish puberulous, glabrescent. *Flowers* in 5-flowered axillary clusters, seen very young only; pedicels slender, c. 5 mm long, red-brownish puberulous. *Sepals suborbicular,* c. 2.7 mm in diam., apex obtuse, red-brownish pubescent without, glabrous within. *Corolla* lobes ovate, c. 0.9 by 0.6 mm, apex subtruncate. *Stamens* c. 0.4 mm long, inserted below the throat of corolla, filaments terete, c. 0.1 mm long, anthers ovoid, c. 0.3 mm long, apex obtuse. *Staminodes* inserted in the throat of corolla, spatulate, c. 0.3 mm long, apex irregularly dentate or truncate, (f. Baillon staminodes absent). *Ovary* conoid, c. 1.5 mm in diam., hirsute, 5-celled, ovules inserted in lower half of cells; style conical, glabrous. *Fruits* unknown.

Type specimen: *Balansa 1824* in P.

Distr.: New Caledonia.

NEW CALEDONIA. Canala, on ferruginous country: *Balansa 1824* (L, P), young fl. Nov.

Remarks: The description given above is partly drawn up after Pierre's drawing, partly based on Baehni's description.

12. P. ? acuminata (Baillon) Baehni, 1942, 406 — *Sebertia acuminata* Pierre ex Baillon, Bull. Soc. linn. Paris 2, 1891, 945, *nomen nudum*; Engler & Prantl, Nat. Pfl. Fam., Nachtr. 4, 1, 1897, 280; Guillaumin, Ann. Mus. col. Mars. 19, 1911, 188 — *Sersalisia ? acuminata* Baillon, l. c. 945.

Trees, 8—10 m. Branchlets terete, up to 8 mm in diam., glabrous except for the uppermost parts which are minutely appressedly brownish puberulous, brownish or greyish when dry. *Leaves* crowded towards tips of branchlets, oblong or sublanceolate, 4—9 by 1.5—3.5 cm, apex obtuse or subacute, angle of leafbase 90° or less, very shortly and sometimes obliquely tapering into petiole; young leaves red-brownish puberulous on either side, adult ones glabrous, nitidous and greenish above, minutely appressedly ferruginously puberulous below, thin coriaceous; midrib impressed above, prominent below, secondary nerves 8—15, ascending at an angle of 60°—70°, straight, near margins recurved and indistinctly archingly joined, hardly visible above, faint below, tertiary nerves mainly parallel to secondary ones, laxly reticulate near margins, faint on either side; petioles 1.5—2.5 cm long, subterete, minutely appressedly red-brownish puberulous, finally glabrescent. *Inflorescences* and *flowers* unknown. *Fruits* obovoid, sessile, 3.5(—4) by c. 2.2 by c. 1.9 cm when dry, glabrous, pericarp purple, rather thin; seeds solitary, obovoid, 2.3(—3) by 2 by 1.7 cm, testa rather thick, 1—1.5 mm thick, yellowish, nitidous, scar covering half of surface of seed, obovate, hilum apical, raphe distinct, cotyledons thick, albumen none, radicle punctiform.

Type specimen: *Balansa 3468* in P.

Distr.: New Caledonia.

NEW CALEDONIA. along creek above Ouroué, near mouth of Dothio river: *Balansa 3468* (L, P), tree 8—10 m, fr. Dec.

Remarks: According to Baehni *Balansa 3418* serves as the type specimen, but comparing the localities of *Balansa 3418* and *Balansa 3468*, the first number must be a printing error, so *Balansa 3468* is regarded as the type specimen of *Pouteria ? acuminata*.

13. P. maclayana (F. v. M.) Baehni, 1942, 307; White, J. Arn. Arb. 31, 1950, 109 — *Bassia maclayana* F. v. M., Vict. Nat. 1, Feb. 1885, 168, *nomen nudum*, (sphalm. "*macleyana*"); idem, Melb. Chem. & Drugg. 7, April 1885, 93, *nomen nudum* — *Illipe maclayana* F. v. M., Descr. Not. Pap. Pl. 6, June 1885, 12, (sphalm. "*macleyana*"), *descr.*; Warburg, Pflanzenkl. und Nutzpfl. Neu-Guineas, in Krieger, Neu Guinea, 1899, t. 9 — *Bureavella maclayana* (F. v. M.) Pierre, Not. bot. Sapot., 1890, 16, (sphalm. "*macleyana*"); Engl. & Prantl, Nat. Pfl. Fam., Nachtr. 4, 1, 1897, 297, (sphalm. "*macleyana*"); Dubard 1,912, 40, (sphalm. "*macleyana*"); Krause, Engl. Bot. Jahrb. 58, 1923, 486, (sphalm. "*macleyana*") — *Lucuma maclayana* (F. v. M.) H. J. Lam, 1925, 221, 267; idem, 1927, 476; idem, 1932, 567 — *Lucuma pomifera* Zippel, in synon. genericorum in Pierre, l. c. 15, in genus Beauvisagea — *Beauvisagea pomifera* Zippel ex Baillon, Hist. Pl. 11, 1892, 288, *nomen nudum* — *Beauvisagea pomifera* (Zippel) Pierre in Krause, l. c. 482, *nomen nudum* — *Sideroxylon ? zippelianum* Pierre ex Boerl., Handl. Fl. Ned.

Ind. 2, 1, 1891, 312, *nomen nudum* — *Sideroxylon pomiferum* (Zippel) Engler, Engl. & Prantl, Nat. Pfl. Fam., Nachtr. 4, 1, 1897, 277, *nomen nudum* — *Planchonella pomifera* Dubard, 1912, 63 — *Lucuma pomifera* (Pierre) H. J. Lam, 1925, 221 — *Crataeva hansemannii* K. Schum., Fl.

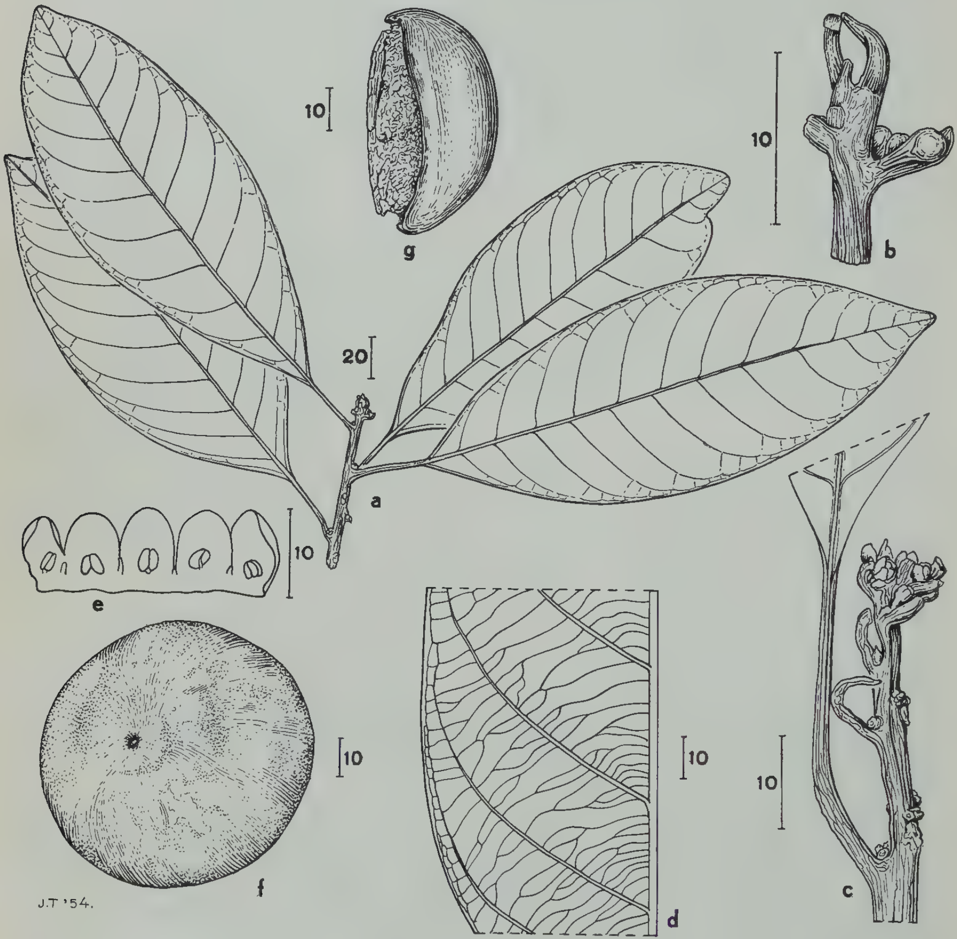


Fig. 5. *P. maclayana*, a. branchlet with leaves, b. tip of branchlet with flower-buds, c. idem, with young flowers, d. part of leaf showing secondary and tertiary nerves, e. corolla with stamens and staminodes from young flower, f. fruit, g. seed. (a–e. from *Zippel s.n.*, f–g. from *Mair NGF 1821*).

Deutsch. Schutzgeb. Südsee 1901, 335, p.p. — *Lucuma navicularis* H. J. Lam, 1925, 223, t. 59 — *Fig. 5.*

Trees, up to 30 m. Branchlets terete, smooth, c. 3—7 mm in diam., reddish-brown or golden-yellowish puberulous on tips only, glabrescent. *Leaves* crowded at tips of branchlets, oblong-obovate or obovate-lanceolate, (6—)15—35.5(—53) by 3.5—10(—14) cm, apex bluntly acuminate, sometimes very shortly so, acumen 5—10 mm long, or apex acute or rounded to obtuse, angle of leafbase less than 90°, base decurrent; juvenile leaves yellowish or golden-yellowish puberulous, glabrescent, adult ones chartaceous, glabrous and nitidous on either side, sometimes except for the midrib below; midrib impressed and minutely crested above, strongly prominent and sometimes reddish-brown tomentose below, secondary nerves (5—)9—13 (—15), ascending at an angle of 35°—70°, straight but slightly curved near margins and diminishing until inconspicuous, sometimes archingly joined by some thickened tertiary nerves, impressed above, prominent below, tertiary nerves distinct on either side, transverse, more or less mutually parallel, rarely irregularly reticulate, angle with midrib in the middle of the leaves 90°—135°; petioles (1.5—)2—5 cm long, flattened or sometimes distinctly canaliculate above, rounded below, glabrous or sometimes reddish-brown tomentose, glabrescent. *Flowers* in 6-florous (always?), axillary clusters; pedicels 2—3 mm long, sparsely yellowish puberulous, rather stout. *Sepals* suborbiculate, c. 2 mm in diam., connate at base, yellowish puberulous without, glabrous within. *Corolla* c. 1 mm long in bud, lobes four times larger than tube (f. Pierre). *Stamens* inserted just below the throat of corolla, filaments short, subulate, anthers suborbiculate, subbasifix. *Staminodes* inserted in the throat of corolla, short, subulate. *Ovary* conoid, pubescent; style short. *Fruits* depressedly globose, up to 13 cm in diam. in vivo, c. 8.5 cm in diam. when dry, at first ferruginously hirsute, glabrescent, pericarp very thick, apparently very fleshy; seeds 5, ovoid, c. 5.5 by 3 by 3 cm, laterally compressed, subcarinate on dorsal side, testa very thick, 3—5 mm thick, light or dark brown, scar ovate, c. 5 by 2 cm, very rugose, convex, cotyledons thick, c. 4 by 2 cm, albumen thin, radicle exsert, c. 6 mm long.

Type specimen: *Miklouho-Maclay s.n.* in MEL.

Vern. names: *Lingga,* serindieng; *Merampi,* arambahi; *Amboina,* widurik, anahan, ay-lonahan, tjampada utang; *New Guinea,* hutaka (*Manikion dialect*), eentawa (*Mimika dialect*), pe (*Karkar island*), dim (*Finisterre mountains*).

Distr.: Lingga, Talaud and Nanusa islands, Amboina, Key, New Guinea, Solomons.

LINGGA. Tamiang island, without loc.: *Teysmann s.n.* (BO, K, L, UC).

TALAUD and NANUSA ISLANDS. Merampi, near Damputis, alt. c. 20 m: *Lam 3416* (BO, L, UC).

AMBOINA. According to a specimen without a collector's name and number in the Kew Herbarium, but with the indication Amboina this species is also found on that island.

KEY, without known locality: *Jaheri 137* (L).

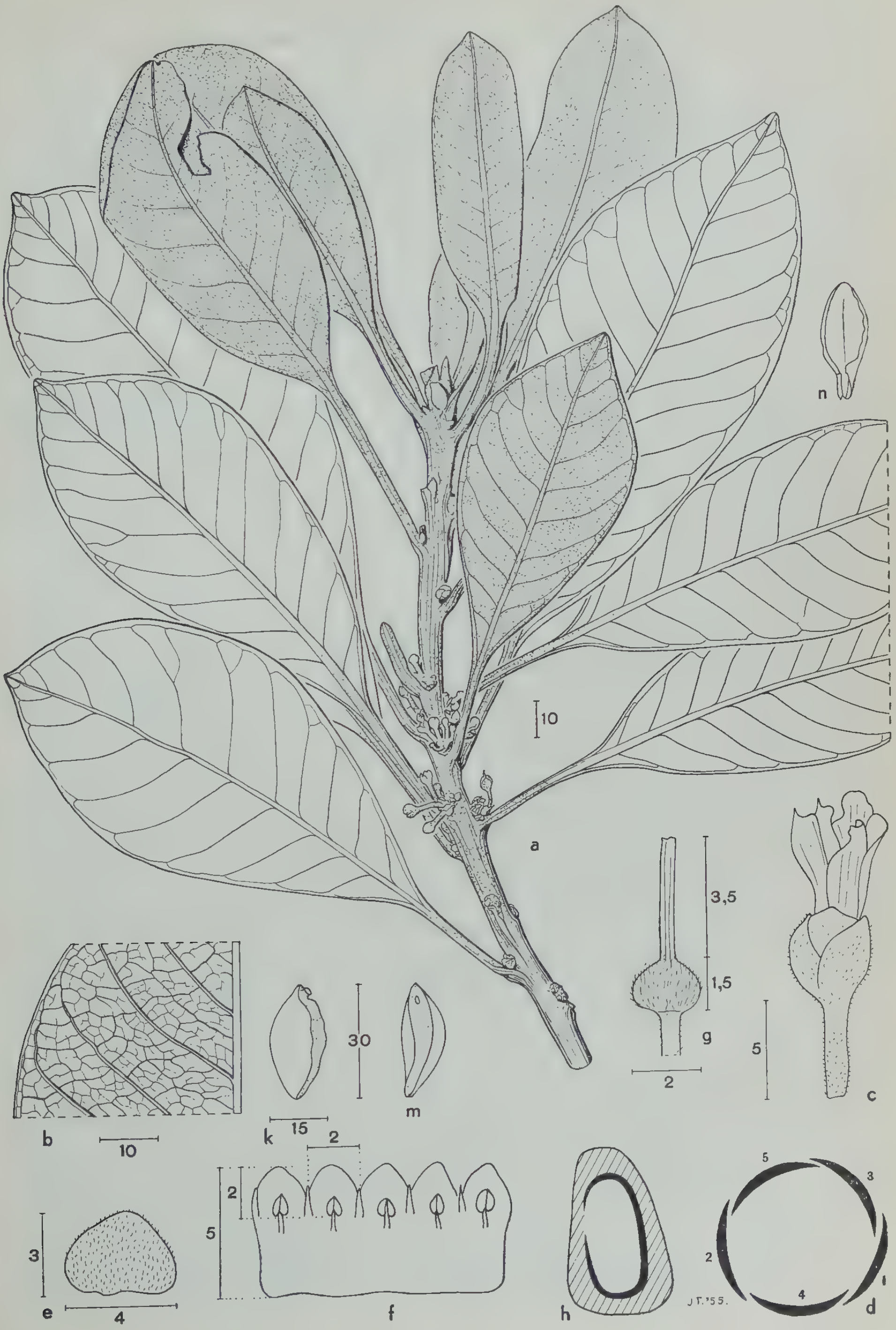
NEW GUINEA. Western New Guinea, distr. Manokwari, Andai: *Beccari 533* (FI, P), fr. Aug.; Momi, on flat clayey soil, in primary forest, alt. c. 20 m: *Kostermans 290* (= *NIFS bb 33482*) (BO, L), fairly common, tree c. 20 m, with buttresses; distr. Geelvink Bay, Japen Island, Seroei, alt. c. 250 m: *NIFS bb 30654* (A), Sept.; distr. Mimika, Njaja (Oeta), in primary forest, on sandy soil, flat country, alt. c. 3 m: *NIFS bb 32854* (= *Lundquist 135*) (L), tree 25 m; without loc.: *Zippel s.n.* (L), fl. — Northeastern New Guinea, distr. Madang, Karkar island: *Mair NGF 1821* (A, K, LAE), tree c. 20 m, fr. large, seeds 5, embedded in a firm, fleshy, yellow edible pulp, Febr.; near Finisterre mountains: *Miklouho-Macklay s.n.* (MEL, P), fr. — Southeastern New Guinea, Western division, Oriomo river, Wuroi, in rainforest substage, alt. 5—10 m: *Brass 5905* (A, L), slender tree, fr. green, hard pale brown seeds in yellow pulp, fr. Febr.—March.

SOLOMONS. Fauro island: *Walker BSIP 279* (A), tree 15 m, buttresses rounded — Rendova, New Georgia, Ovusa, in foothill rain forest: *Walker & White BSIP 171* (A, BRI), tree 30 m, buttresses spreading.

14. P. wakere (Pancher & Sebert) Baehni, 1942, 335 — *Chrysophyllum wakere* Pancher & Sebert, Bois Nouv. Caléd., 1874, 193 — *Sideroxylon wakere* (Pancher & Sebert) Baillon, Bull. Soc. linn. Paris 2, 1800, 882; Guillaumin, Ann. Mus. col. Marseille 19, 1911, 188 — *Planchonella wakere* (Pancher & Sebert) Pierre, Not. bot. Sapot., 1890, 36 — *Fig. 6.*

Moderate sized trees, up to 23 m. Branchlets terete to subangular, 3—10 mm in diam., appressedly reddish-brown or blackish tomentose on tips only. *Leaves* more or less crowded towards tips of branchlets, obovate-oblong to subspatulate, sometimes ovate, 9—21(—25) by 2.5—8(—13) cm, apex shortly and bluntly acuminate, sometimes rounded to obtuse, margins with a stout marginal nerve, angle of leafbase less than 90°, base decurrent over a rather long distance; firmly coriaceous, juvenile leaves densely reddish-brown tomentose on either side, adult ones glabrescent and pale greenish or olivaceous, nitidous above, reddish-brown or greyish tomentose with some glabrous patches below; midrib impressed above, very prominent below, secondary nerves (6—)9—14, ascending at an angle of 45°—75°, slightly curved, near margins distinctly archingly joined, prominulous above, prominent below, tertiary nerves laxly reticulate, near midrib with some stout nerves parallel to the secondary nerves, near margins sometimes with a few flexuose transverse ones; petioles 2—5.5 cm long, flattened and sometimes narrowly keeled above, rounded below, greyish-yellowish to red-brownish or blackish tomentose, glabrescent. *Flowers* in 4—6-florous axillary clusters; pedicels 4—9 mm long, angular when dry, ferruginously puberulous. *Sepals* broadly ovate, 3—4 by 3—4 mm, connate at base, rounded to obtuse at apex, ferruginously pubescent without, glabrous within, inner sepals with more or less membranous margins, persistent in fruit. *Corolla* c. 5 mm long, tube c. 3 mm long, lobes orbiculate, c. 2 by 2 mm, obtuse. *Stamens* 1.5—2 mm long, inserted below the throat of corolla, sometimes sterile, filaments c. 1 mm long, subulate, tips attenuate, anthers ovoid, 0.5—1 mm long, basifix. *Staminodes* linear-lanceolate, c. 1 mm, sometimes dentate, inserted in the throat of corolla. *Ovary* subglobose, 1.5 by 2 mm, 4—5-celled, subabruptly tapering into style, ferruginously hirsute, ovules inserted in upper half of cells; style cylindrical, c. 3.5 mm long, glabrous, grooved, stigma distinct. *Fruits* obovoid, 4—5 by 2.5—4 by 3—4 cm when dry, shortly and obtusely acuminate, 1—3-seeded, yellowish to brownish tomentose, glabrescent, pericarp becoming very hard when dry; *seeds* ellipsoid, 2.5—4 by 1—1.5 by 1—1.2 cm, testa thick, 2—3 mm, brown, shining, scar oblong, acute at both ends, c. 2.5 by 0.5 cm, hilum prominent, apical, albumen membranous, cotyledons thick, radicle slender, acute, exserted.

Fig. 6. *P. wakere,* a. branchlet with leaves and flowers, b. part of leaf showing secondary and tertiary nerves, c. flower, d. diagram of calyx, e. outer sepal, outside, f. corolla with stamens and staminodes, g. pistillum, h. part of ovary, longitudinal section, k. seed, lateral view, m. idem. ventral view, n. embryo, lateral view. (a, b. from *Balansa 459,* c–k. from *Chittendale s.n.,* k–p. from *Passal 1*).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Lectotype specimen: *Sebert & Fournier 25* in P.
Vern. name: azou.
Distr.: New Caledonia.

NEW CALEDONIA. Prony, in North forest, on lateritic soil, alt. 300 m: *Cribs 1575* (P), tree 20—25 m, fl. white-yellowish, fr. Dec.; ibidem: *Franc A 18* (A, P), fl.; Dombéa: *d'Aleizette 33 n.c.* (P), fl. Nov.; Plaine des Lacs: *Le Rat & Le Rat 2578* (P); in forests of St Louis and La Coulée: *Passal 1* (FI), high tree, fr.; South Bay: *Le Boucher 1575* (NSW) fr.; ibidem, between Bay N'go and Touaourou: *Rohrdorf 114* (Z); without loc.: *Pancher & Sebert 25* (P), fr.; ibidem: *Balansa 459* (P), fl. & fr.; ibidem: *Pancher s.n.* (K, L), young fl., fr.

AUSTRALIA. New South Wales, Sydney Botanical Garden: *Chittendale s.n.* (K, NSW), fl. Nov., cultivated.

Remarks: Since no type specimen has been mentioned by Pancher and Sebert, as a lectotype specimen *Pancher & Sebert 25* is chosen.

15. P. annamensis (Pierre) Baehni, 1942, 311 — *Planchonella annamensis* Pierre ex Dubard in Lec., Not. Syst. 2, 1911, 83; Dubard, Ann. Mus. col. Marseille 20, 1912, 51 — *Sideroxylon annamensis* (Pierre) Lecomte, Fl. gén. Indo-Chine 3, 1930, 892 — *Sideroxylon hainanense* Merrill, Lignan Sc. Journ. 9, 1930, 41 — *Pouteria hainanensis* (Merrill) Baehni, l. c. 312.

Large high trees. Branchlets terete, 2—4 mm in diam., glabrous, terminal buds c. 4 mm long, reddish-brown tomentose. *Leaves* scattered along the branches, young ones lanceolate, mature ones oblong-obovate or oblong-lanceolate to lanceolate, 6—15.5 by 2—5.5 cm, apex rounded to obtuse, acuminate, in the young leaves acute, acumen 2—5 mm; margins minutely undulate and with a slender intermarginal nerve, base tapering into petiole, angle less than 90°; chartaceous, densely reddish-brown tomentose on either side, but later glabrous on either side, and olivaceous and nitidous above, the underside more or less dull; midrib impressed and minutely crested above, prominent below, secondary nerves 5—9(—11), ascending at an angle of 50°—60°, straight, curved near margins and diminishing until inconspicuous, sometimes archingly joined by some thickened tertiary nerves, prominent above, prominulous below, tertiary nerves laxely reticulate with some stout nerves parallel to the secondary ones, faint above, distinct below; petioles 1.5—3.5(4.5) cm long, flat to slightly convex above, rounded below, glabrous. *Flowers* in 1—3-florous, axillary clusters; pedicels angular, 1—3 mm long, rather stout, ferruginously tomentose. *Sepals* orbiculate, 2—2.5 by 1.5—2.5 mm, apex rounded to obtuse, connate at base, the outer ones densely ferruginously puberulous without, glabrous within, the inner ones with membranous, glabrous and minutely undulate margin. *Corolla* c. 3 mm long, tube c. 2—2.5 mm long, lobes orbicular ,c. 1 by 1 mm, apex rounded to obtuse. *Stamens* c. 2.5 mm long, inserted near base of corolla tube, filaments c. 1 mm long, subulate, attenuate at tip, adnate to corolla up to 1 mm from base, anthers ovoid, c. 0.5 by 0.5 mm long, basifix. *Staminodes* subulate, c. 1 mm long, narrowed at apex, inserted in the throat of thd corolla. *Ovary* subglobose, c. 0.5 by 0.5 mm, flattened at the top, glabrous, with a subcupuliform, c. 0.5 mm high disk which is densely ferruginously pilose, ovules inserted in lower half of cells; style cylindrical, c. 2 mm long, truncate, glabrous, stigmas minute. *Fruits* sessile, depressedly globose, 1.8—4.5 by 1.7—4.5 cm when dry, glabrous, pericarp thick, 2—5-seeded; seeds ovoid, c. 1.8 by 1 by 0.8 cm, laterally compressed, subcarinate at dorsal side, testa nucamentaceous, yellowish, nitidous, scar oblong, narrow, c. 1.8 by 0.2 cm, cotyledons subfoliaceous, albumen membranous, radicle exserted.

Type specimen: *Bon 2171* in P.

Distr.: Tonkin, Hainan.

TONKIN. Khang Thuong, in forest of Ma-co: *Bon 2171* (P), fl.

HAINAN. Taam Chau distr., Shui Mei Shan, on dry ground: *Tsang Wai-Tak 496* (A, K, UC), tree 9 m, fl. white, May; Poting: *How 73361* (A, BM, BO, P), juv. fr. July—Aug.; Yaichow, in forests, alt. c. 500 m: *How 70406* (A), tree 11 m, fr. green, March—July; in light woods, on mountain side: *Liang 63318* (A), tree 18 m or more, fr. green, with juice, seed reddish white, Sept.; in woods: *Wang 36053* (A), tree, fr. green, Jan.; in mixed woods: *Wang 35058* (A), tree 20 m, fr. green, juicy, Nov. in mixed woods, alt. c. 450 m: *How & Chung 70184* (A, P), tree 15 m, fr. when mature purplish red, Febr. — Tam distr., Nodoa, on dry steep slope, sandy soil, rocky: *Lei 295* (K, P), tree 6 m, fr. Dec. — Dai Land distr., Dung Ka, alt. c. 700 m, in forest: *Chung & Tso 43874* (A), tree 15 m, fr. green, glabrous, gibbous.

16. P. pancheri (Baillon) Baehni, 1942, 308 — *Sideroxylon pancheri* Baillon, Bull. Soc. linn. Paris 2, 1890, 885; Guillaumin, Ann. Mus. col. Marseille 19, 1911, 187 — *Sideroxylon pancheri* Baillon, var. *vestitum* Baillon, l. c. 886 — *Sideroxylon pancheri* Baillon, var. *glabrescens* Baillon, l. c. 886 — *Planchonella crassinervia* Dubard, Ann. Mus. col. Marseille 20, 1912, 44.

Shrubs, 2—7 m high. Branchlets terete, up to 9 mm in diam., glabrous, but apical parts densely brownish to greyish tomentose. *Leaves* crowded towards tips of branchlets, oblong-obovate, 6—10(—15) by 2.5—5 cm, apex rounded to obtuse, margins with a stout marginal nerve, angle of leafbase less than 90°, shortly tapering into petioles; juvenile leaves densely brownish to greyish pubescent on either side, mature ones glabrescent, nitidous and brownish olivaceous above, dull, greyish and less densely pubescent below, firmly coriaceous; midrib impressed and minutely crested above, prominent below, secondary nerves 5—9, ascending at an angle of 50°—70°, slightly curved, reticulate or distinctly archingly joined near margins, impressed above, prominent below, tertiary nerves laxely reticulate, impressed above, prominent below; petioles (0.5—)1—2 cm long, flat or shallowly canaliculate above, rounded below, densely greyish to brownish tomentose on either side, glabrescent. *Flowers* solitary, axillary, rather large; pedicels angular, c. 1 mm long, rather stout, densely dark-brownish tomentose. *Sepals* oblong, 6.5—7 by 2.5—4 cm, apex obtuse, connate at base, persistent in fruit, densely dark-brownish tomentose without, glabrous within except for uppermost part. *Corolla* c. 6.5 mm long, tube c. 5 mm long, lobes orbiculate, c. 1.5 by 1.5 mm, obtuse at apex. *Stamens* c. 2.5 mm long, inserted just below the throat of the corolla, filaments subulate, c. 1.5 mm long, attenuate at tips, anthers ovoid, c. 1 mm long, basifix. *Staminodes* lanceolate, c. 1.5 mm long, inserted in the throat of the corolla, dentate at apex. *Ovary* subglobose, c. 2.5 by 2 mm, 5-lobed, 5-celled, densely yellowish villous, ovules inserted in upper half of cells; style cylindrical, c. 4.5 mm long, glabrous, minutely grooved. *Fruits* olivaeformis, c. 3.5 cm long, attenuate at either end, pericarp purple, glabrous; seeds not seen, albumen none, f. Baehni.

Lectotype specimen: *Balansa 3148* in P.

Distr.: New Caledonia.

NEW CALEDONIA. Mt Humboldt, on lateritic soil, alt. c. 500 m: *Balansa 1829* (L, P), fr.; on volcanic hills situated between Canala and Couaoua: *Balansa 3148* (P), shrub 3—4 m high, on lateritic hills near Ouroué, near mouth of Dothio: *Balansa 3463* (P), reduced to a shrub 2—3 m; between Thio and Houailou: *Fetscherin s.n.* (P), fl.; Kanala, on lateritic hills: *Vieillard 2888* (K, P), fl.; Massif Tiebaghi, near Paagoumene: *Däniker 1480* (Z), fl. May.

Remarks: As no type specimen has been indicated by Baillon out of the material mentioned by him *Balansa 3148* has been chosen as the type specimen of this species.

17. P. ? grandifolia (Wallich) Baehni, 1942, 332 — *Sideroxylon grandifolium* Wallich in Roxb., Fl. Ind. ed. Carey, 2, 1824, 348; A. DC, Prodr. 8, 1844, 178; Kurz, Fl. Brit. Burma 2, 1877, 117; Engler, Engl. Bot. Jahrb. 12, 1890, 517; idem, Engler & Prantl, Nat. Pfl. Fam. 4, 1, 1897, 144 — *Planchonella grandifolia* (Wallich) Pierre, Not. bot. Sapot., 1890, 36 — *Lucuma grandifolia* (Wall.) Dubard, Ann. Mus. col. Marseille 20, 1912, 19 — *Sideroxylon regium* Wallich, Cat., 1831, nr 4156, p.p., *nomen* — *Planchonella kerrii* Fletcher, Kew Bull. 1937, 371 — *Pouteria ? kerrii* (Fletcher) Baehni, l. c. 313.

Lofty tree, c. 30 m. Branchlets terete, c. 4 mm in diam., greyish when dry, wrinkled, tips sparsely yellowish puberulous, glabrescent, terminal buds conoid, c. 4 mm long, glabrous. *Leaves* subconferted near ends of branchlets to scattered, oblong-obovate, 5—21 by 3.5—9.5 cm, apex obtusely acuminate, rarely rounded to obtuse, acumen 2—10 mm long, angle of leafbase less than 90°, base slightly tapering into petiole; thin-coriaceous, glabrous on either side, olivaceous to brown olivaceous and nitidous above, olivaceous and dull below; midrib impressed and minutely crested above, strongly prominent below, reddish-yellow or yellowish, secondary nerves (3—)6—12, ascending at an angle of 45°—55°, straight, but curved near margin and diminishing until inconspicuous, prominulous above, prominent below, tertiary nerves mutually parallel, subtransverse, distinct on either side; petioles 1.5—4 cm long, flat above, rounded below, glabrous. *Flowers* in 3—10-florous, axillary clusters; pedicels 2—3 mm long, slender to rather stout, yellowish tomentose. *Sepals* orbiculate to broadly ovate, 2.5—3 by 2.5—3 mm, apex rounded to broadly ovate, connate at base, outer ones yellowish tomentose without, glabrous within, inner ones membranous and with a fimbriate-lacerate margin, yellowish tomentose in the middle only, glabrous within. *Corolla* 2.5—4.5 mm long, tube 1—3 mm long, lobes trapezoid, 1 by 1.5 mm, apex truncate. *Stamens* 1—1.5 mm long, inserted just below the throat of the corolla, filaments slender, 0.5—1 mm long, attenuate at apex, anthers ovoid, c. 0.5 mm long, basifix. *Staminodes* linear, c. 1 mm long, subacute, inserted in the throat of the corolla. *Ovary* conoid, c. 1 by 1 mm, yellowish villous, with a densely yellowish villous disk, ovules inserted in lower half of cells, style rather stout, cylindrical, c. 2.8 mm long, stigma inconspicuous. *Fruit* not seen, but according to Kurz globular, the size of an apple, umbonate, smooth, yellow, later brown.

Type specimen: *Wallich 4155* in K.

Distr.: Assam, Burma, Siam.

ASSAM. Khasia mountains, alt. 900 m: *Hooker & Thompson s.n.* (K, L, P), large tree, June; Silhet: *Wallich 4155* (BM, K, L, LAE, P), fl.; Cachar: *Keenan s.n.* (K).

BURMA. Martaban, in hills between Beeling and Sittang, f. Kurz.
SIAM. Ao-Luk, Krabi, on limestone hill, alt. 100 m: *Kerr 19372* (K), tree, fl. March.

18. P.? celebica Erlee, nov. sp. — *Pag. 502 and f. 7.*

Medium sized trees, 8 m high. Branchlets terete, c. 5 mm in diam., glabrous. *Leaves* scattered along branchlets, broadly lanceolate, 11—20.5 by 5—6 cm, apex acute to faintly acuminate, acumen c. 5 mm long, angle of leafbase less than 90°, base decurrent; firmly coriaceous, when young ferruginously tomentose on either side, adult ones glabrous, nitidous and brownish to olivaceous above, minutely ferruginously tomentose and glabrescent below; midrib flat above, minutely crested, prominent below, secondary nerves 12—14, ascending at an angle of 50°—60°, straight, curved near margins and distinctly archingly joined by some thickened tertiary nerves, impressed and hardly visible above, prominent below, tertiary nerves laxely reticulate, impressed and hardly visible above, prominulous below; petioles c. 2 cm long, flat above, rounded below, brownish puberulous on either side, glabrescent. *Flowers* in 2—6-florous axillary clusters; pedicels 5—9 mm long, brownish puberulous. *Sepals* rotundate, c. 5 by 5.5 mm, apex obtuse, connate at base, coriaceous, brownish puberulous without, glabrous within. *Corolla* in bud 3.5—4 mm long, tube less than 1 mm long, ferruginously puberulous without, glabrous within, lobes c. 2 mm broad, obtuse. *Stamens* 3—3.5 mm long, inserted near base of the tube of the corolla, filaments slender, in bud less than 1 mm long, apex attenuate, anthers oblong, 2.5—3 mm long, subbasifix. *Staminodes* lanceolate, 2—3 mm long, acuminate. *Ovary* conoid, c. 1 by 1 mm, 4—5-celled, with long brown hairs, ovules inserted in upper half of cells, contracted into the short style which is brownish puberulous, furrowed and with pistillum c. 7 mm long. *Fruits* unknown.

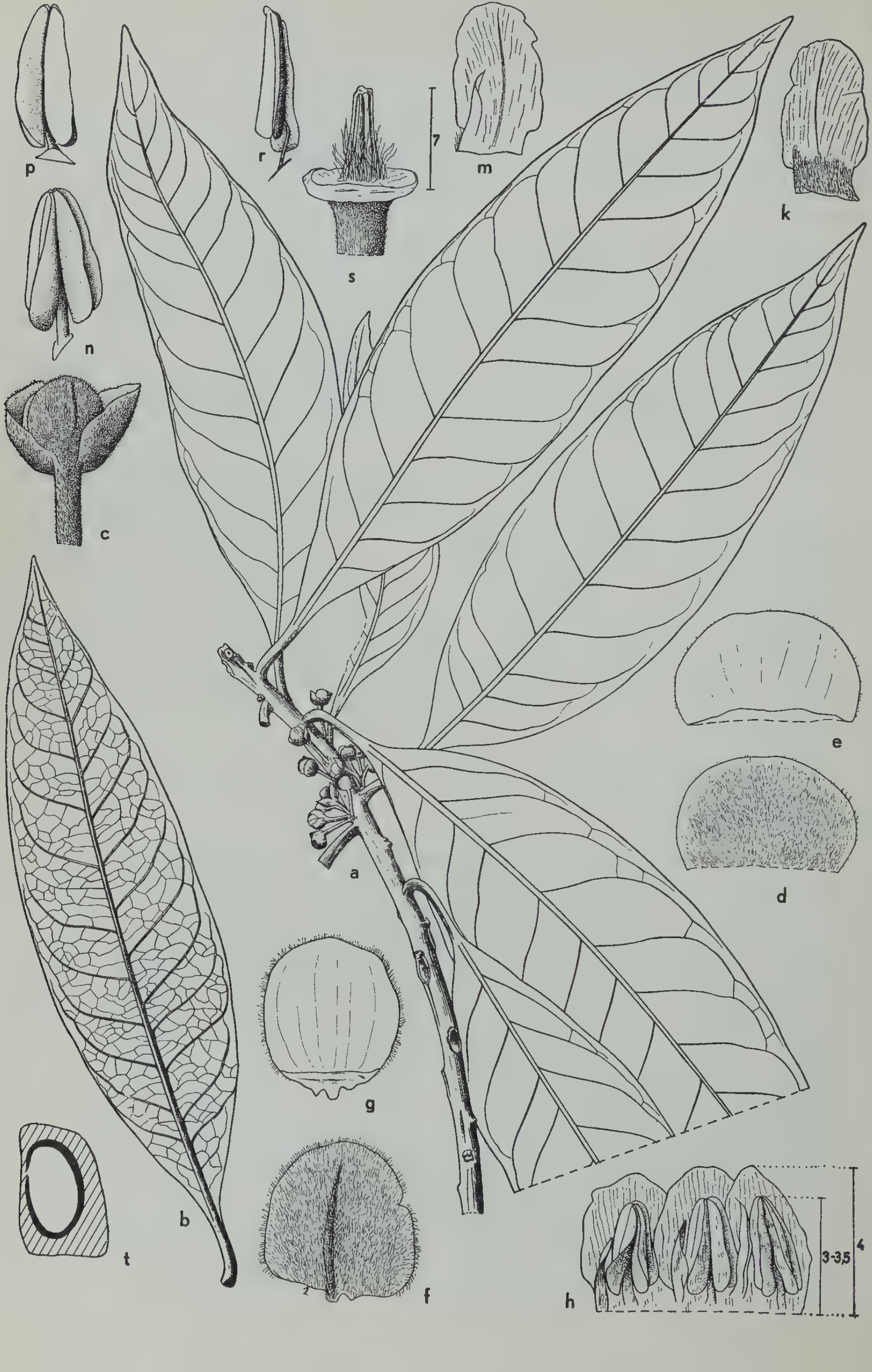
Type specimen: *Kjellberg 2325* in S.

Distr.: Celebes.

CELEBES. Central Celebes, Nuna distr., B. Wawu, Meusa, in rain forest, alt. 800 m: *Kjellberg 2325* (BO, S), tree 8 m, fl. Sept.

19. P. villamilii (Merrill) Baehni, 1942, 318 — *Sideroxylon villamilii* Merrill, Phil. Journ. Sc. 10, 1915, 59; idem, Enum. Phil. Fl. Pl. 3, 1923, 287.

Trees, up to 30 m. Branchlets terete, 2—5 mm in diam., dark reddish-brown when dry, sparsely brownish pubescent on tips only, glabrescent. *Leaves* scattered, oblong to lanceolate, sometimes ovate, 4.5—22 by 1.5—6.5 cm, apex acuminate or obtusely to acutely acuminate, angle of leafbase less than 90°, base shortly decurrent; thin coriaceous, brown olivaceous and nitidous above, somewhat dull below; midrib flat above, minutely crested, prominent below, secondary nerves 7—10, ascending at an angle of 40°—50°, slightly curved, reticulate near margins or diminishing until inconspicuous, prominent on either side, tertiary nerves distinct on either side, laxely reticulate, near margins subtransverse; petioles 1.5—3 cm long, flat to shallowly canaliculate above, rounded below, minutely brownish pubescent on either side, glabrescent. *Flowers* in up to 7-flowered, axillary clusters; pedicels c. 4.5 mm long, sparsely brownish pubescent. *Sepals* 5 or 6, ovate to broad-ovate, c. 2 by 1.5 mm, apex rounded, connate at base, sparsely brownish to ferruginously pubescent without, glabrous within.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Corolla in bud c. 2 mm long, brownish puberulous within, glabrous within, tube c. 1 mm long, lobes orbiculate, c. 1 by 1 mm, truncate. *Stamens* c. 0.5 mm long, inserted just below the throat of the corolla, filaments very short, subulate, anthers ovoid, subbasifix. *Staminodes* linear, c. 0.5 mm long, inserted in the throat of the corolla. *Ovary* globose, densely covered with ferruginous stiff hairs; style cylindrical, truncate, glabrous, minutely ribbed. *Fruits* depressedly globose (f. Merrill), up to 4.5 cm in diam. when dry, glabrous, pericarp thick; seeds 5, ovoid, laterally compressed, c. 3 by 1.5 by 0.8 cm, carinate at back, testa thick, c. 2 mm, yellowish, nitidous, scar narrow, c. 2 by 0.5 cm, embryo not seen.

Type specimen: *FB 19762* in PNH.

Vern. name: duclitan (Tagan).

Distr.: Philippines.

PHILIPPINES. Luzon, prov. Bataan, Lamao river, in hill forests: *Borden 291* (UC), large tree, fr. Febr.; ibidem: *Borden 1903—4* (UC), fr.; ibidem, Mt Mariveles: *Meyer 2580* (BO, SING), fr. Febr.; prov. Laguna, Mt Maquiling: *Villamil 20604* (P), fl. Sept.; ibidem: *FB 19762* (PNH), fl. & fr.; without loc.: *Mabesa 26322* (A, K), fr. Dec.

20. P. macrantha (Merrill) Baehni, 1942, 328 — *Sideroxylon macranthum* Merrill, Phil. Bur. Gov. Bull. 35, 1905, 56; Enum. Phil. Fl. Pl. 3, 1923, 286 — *Lucuma macrantha* (Merrill) H. J. Lam, 1925, 225; idem, 1927, 477 — *Sideroxylon stenophyllum* Merrill, Phil. Journ. Sc. 3, 1908, 258; Elmer, Leafl. Phil. Bot. 3, 1910, 870; Merrill, Enum. Phil. Fl. Pl. 3, 1923, 287 — *Planchonella koordersii* Pierre ex Koorders, Med. 's Lands Plantentuin 19, 1898, 519, *nomen nudum* — *Lucuma dolichosperma* H. J. Lam, 1925, 223, f. 60.

Large trees, up to 40 m high. Branchlets terete, 2—6 mm in diam., brownish grey when dry, ferruginously or brownish puberulous at tips only, glabrescent, terminal buds conoid, c. 4 mm long, densely ferruginously puberulous. *Leaves* crowded at tips of branchlets, juvenile ones lanceolate, densely ferruginously puberulous on either side, adult ones obovate-oblong or obovate-lanceolate, (3.5—)10—24(—29) by 2—10 cm, apex abruptly narrowing and sometimes long acuminate, acumen 2—10 mm long or apex bluntly acuminate, sometimes very slightly so, sometimes apex also rounded to obtuse, angle of leafbase less than 90°, base narrowed; chartaceous to thin coriaceous, first sometimes ferruginously puberulous on either side, ultimately becoming glabrous, rarely ferruginously puberulous along midrib and secondary nerves, nitidous above, dull below; midrib impressed and minutely crested above, prominent below, secondary nerves 8—12(—17), ascending at an angle of 45°—65°, slightly curved, reticulate near margins or diminishing until inconspicuous, sometimes distinctly archingly joined by some thickened tertiary nerves, impressed to prominulous above, prominent below, tertiary nerves distinct on either side, irregularly reticulate or longitudinally stretched or nerves sometimes more or less transverse and,

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Fig. 7. *P. ? celebica,* a. branchlets with leaves and flowers, b. leaf showing secondary and tertiary nerves, c. flower, d. outer sepal, outside, e. idem, inner side, f. inner sepal, outside, g. idem, inner side, h. part of corolla showing stamens and staminodes, k. corollalobe, outside, m. idem, inside, n, p, r. stamens, s. pistillum, t. part of ovary with ovulum. (from *Kjellberg 2325*).

mutually parallel at least near margins; petioles 1.5—4.5 cm long, flat above, rounded below, densely ferruginously tomentose, glabrescent. *Flowers* in 5—9-florous, axillary clusters; pedicels 3—6 mm long, rather stout, yellowish hirsute. *Sepals* ovate to suborbiculate, 4.5—5 by 4.5—5 mm, apex obtuse, connate at base, yellowish puberulous without, sericeous within, the inner ones with membranous, fringed margins. *Corolla* 4—5 mm long, tube 2—3 mm long, lobes suborbiculate, c. 2 by 2 mm, rounded to obtuse, truncate. *Stamens* c. 1.5 mm long, inserted just below the throat of the corolla, filaments slender, less than 0.5 mm long, anthers ovoid, c. 1 mm long, subbasifix. *Staminodes* linear, c. 1 mm long, subacute, inserted in the throat of the corolla. *Ovary* subglobose, c. 1 by 1.5 mm, with a cupuliform disk, the whole densely ferruginously villous, ovules inserted near the bottom of the cells; style 2—3 mm long, cylindrical, yellowish sericeous at base, glabrous towards the top, minutely ribbed, truncate. *Fruits* globose and then 3.5—4.5 cm in diam. when dry or ovoid to oblong and then 4.8—6.5 by 3.3—4.5 by 1—1.5 cm, ferruginously puberulous, 5-celled, pedicel c. 1 cm long, c. 6 mm in diam.; seeds 2—4, ovoid or oblong, more or less laterally compressed, 2—5 by 1—2 by 0.9—1.3 cm, carinate at back, testa brown, nitidous, thick, scar oblong, narrow, acute at both ends, 2—4 by 0.4—0.9 cm, cotyledons thick, radicle exserted, albumen none, (f. Lam membranous, surrounding the embryo).

Type specimen: *Borden 2741* in PNH.

Vern. names: daranau (Mindoro); sasangkangan (Celebes); soeing (Amboina).

Distr.: Philippines, Celebes, Amboina.

PHILIPPINES. Luzon, prov. Bataan, Lamao river, Mt Mariveles: *Borden 2741* (BO, K, PNH, SING), fl. March; ibidem: *Barnes 51* (BO, SING); ibidem: *Borden 1809* (BO, K, SING), fr. Sept.; ibidem: *Whitford 1246* (P), fl. May; Lamao: *Edano 4075* (PNH), fr. Nov.; without loc.: *Alvarez 12955* (NSW) — prov. Tayabas, Pagbilao: *Merrill 2608* (BM, L, NSW), fl. April/May — prov. Camarines, Norte, South Tarum, Bo Pambuhan (Daet), c. 50 m from beach, alt. c. 5 m: *Arizabal 30498* (UC), tree 10 m, fr. round, green, April; without loc.: *Ramos 2079* (BM, BO, BRI, L, P, SING), fr. Dec.; ibidem: *Alvarez 23702* (A, BM, P), fl. March — prov. N. Ecija, Bongabon: *Vidal 439* (K), fl. — prov. Isabela: *Clemens 16617* (UC), tall forest tree, fr. green, apple-like, April — Mindoro, Mansalay, Mt Yagaw: *Conklin 17450* (L), fl. March; Paluan: *Ramos 39560* (A, BM, BO, L, P), fl. April; ibidem, Bo. Manual, South Warvan, forest near bank of Warvan river: *Sulit 17089* (L, PNH), tree 20 m, fr. green, Dec.; without loc.: *Merritt 8626* (K), fr. Jan.; ibidem: *Merrill 9833* (NSW, SING), fl. Febr.—April — Sibuyan, prov. Capiz, Magallanes, Mt Giting-giting: *Elmer 12411* (A, BM, BO, FI, L, NSW), juv. fr. May — Balabac, Mt Counayan, in swampy forest: *Ramos & Edano 49860* (UC, Z), tree 19 m, fr. green, Nov.

CELEBES. Minahasa, Menado, in forest near camp Pinamorongang (Kajoewatoe), alt. 500 m: *Koorders 18882 β* (BO, L, P), tree 40 m, fr. Febr.; *Mt Pinamorongan* (Kakas), on fertile volcanic sand, alt. 500 m: *Koorders 18868 β* (BO), tree 35 m, fr. green.

AMBOINA. Siwei, on flat sandy-clayey soil, in old forest, scattered, scanty, alt. c. 410 m: *NIFS bb 14290* (= *Malessy 16*) (BO), tree 17 m.

21. P. doonsaf van Royen, nov. sp. — *Pag. 502 and f. 8.*

Trees, up to 35 m. Branchlets stout, 3—8 mm in diam., greyish to blackish-greyish sericeous, glabrescent. *Leaves* scattered to subconferted at

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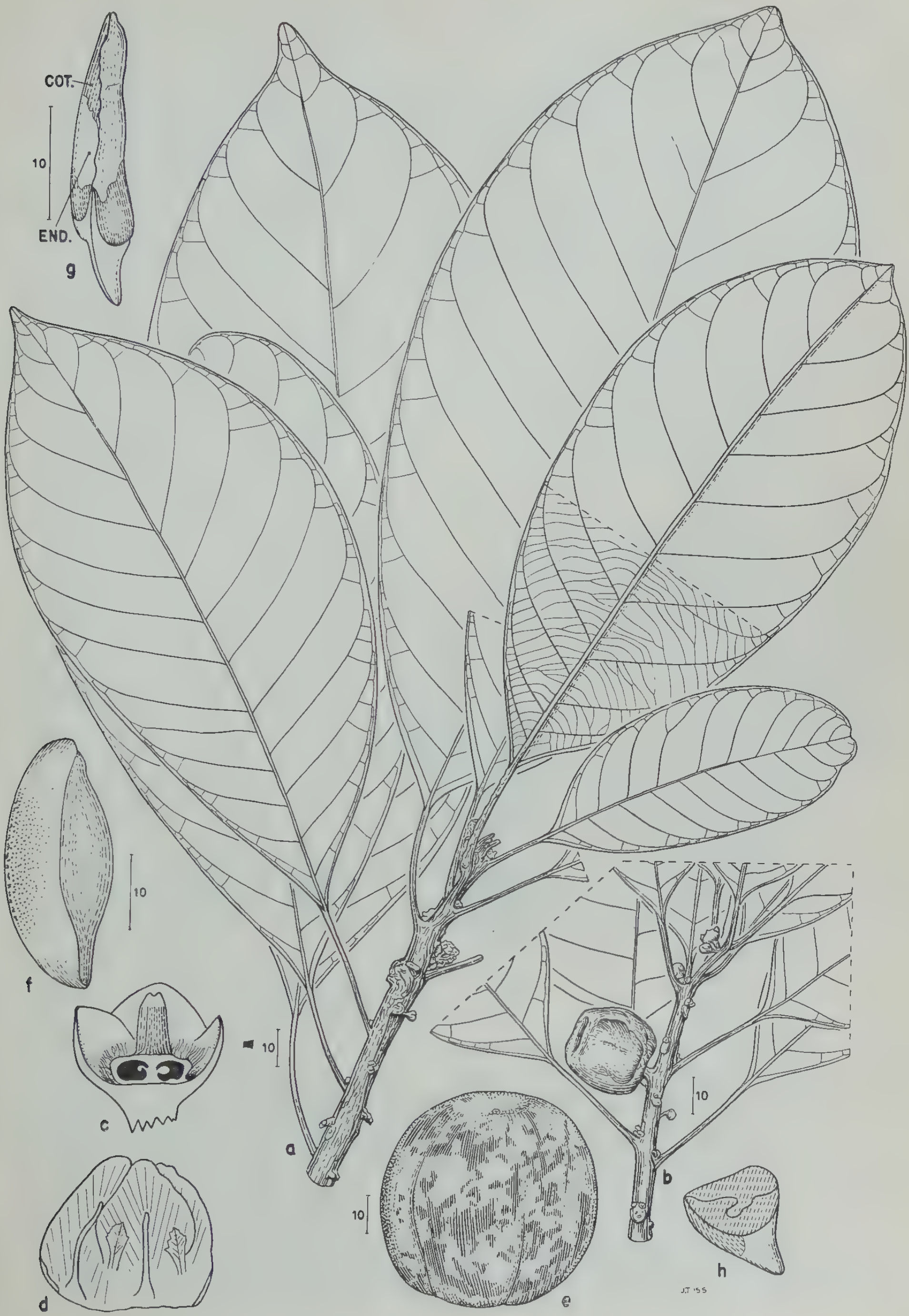
Fig. 8. *Pouteria doonsaf,* a. habit, b. young fruit, c. longitudinal section of overy, d. inner side of corolla, e. mature fruit, f. lateral view of seed, g. embryo, h. transverse section of embryo. (from *van Royen 3506*).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apex of branchlets, elliptic to subovate, 16—36 by 6—15 cm, apex obtuse to obtusely acuminate, acumen 2—12 mm, base cuneate, very shortly decurrent; subcoriaceous, glabrous on either side except sparsely hairy along lower surface of midrib, nitidulous above, dull below; midrib grooved above and minutely crested, prominent below, in the largest leaves crested above in the basal part only, with scattered white hairs below, secondary nerves 9—15, ascending at an angle of c. 60°, straight but curved at the tips, diminishing until inconspicuous near margin or archingly joined by some thickened tertiary nerves, canaliculate above, prominent below, tertiary nerves transverse, very often curved, prominulous above, prominent below; petioles 1.5—5 cm long, grooved above, greyish sericeous below and rounded. *Flowers* 1 or 2 per axil; pedicels angular, 2—3 mm long, whitish green sericeous. *Sepals* broadly deltoid to ovate, 1.5—2.5 by 1—1.5 mm, subobtuse, yellowish sericeous on either side, the inner ones glabrous within in the basal part. *Corolla* 2—3 mm long, lobes 1.5—2.5 by 1—1.5 mm, deltoid to ovate, subobtuse. *Stamens* seen in reduced for monly, lanceolate, c. 1 mm long, inserted near base of corolla. *Staminodes* quadrangular to spatulate, c. 0.8 mm long, apiculate, margin irregularly dentate, crested within. *Ovary* disciform, c. 1 by 1.5 mm, 5-celled, pale ferruginously strigose, abruptly narrowing into style, ovules inserted about halfway the placenta, pendulous; style conoid, c. 1 mm long, grooved, with 5 white stigmas, in fruit slightly thickened at base. *Fruits* pomiform, 5—10 cm in diam., green in vivo, apex rounded, 1—3-seeded, pale ferruginously floccose, glabrescent, pericarp spongy, ligneous, c. 3 mm thick; seeds boat-shaped, 5—7 by 2.5—3.5 by 2—2.5 cm, obtuse at either end, pale yellow with numerous brownish spots, nitidous, scar occupying about $^{1}/_{3}$ of the seed, 4.5—6.5 by 2—2.5 cm large, whitish, endosperm membranous, cotyledons thick and fleshy, radicle acute, exserted. Pedicel of fruit up to 10 by 6 mm.

Type specimen: *van Royen 3506* in L.

Vern. name: doonsaf (Biak dialect); boeboeb (Manikong dialect).

Distr.: New Guinea.

NEW GUINEA. Western New Guinea, distr. Radjah Ampat, Sorong, behind Forest Department, alt. c. 10 m, in Eugenia forest on slope along creek: *van Royen 3506* (L), tree 17 m, fl. buds green, fr. green with brownish tomentum, March, white latex, trunk smooth greyish; distr. Manokwari, Oransbari: *BW 1137, 1927, 2076* (L), tree 27—35 m, fl. fr. Sept./Nov.

Remarks: The specific epithet has been derived from the native name of this tree.

This species is closely related to *Pouteria macrantha* but differs from that species in numerous details which are listed below:

Number of flowers in each axil 1 or 2 (5—9 in *P. macrantha*), petioles grooved above (flat), leaves more often elliptic (more often obovate-lanceolate), secondary nerves straight (curved), angle of leaf base c. 90° (70°—90°), tertiary nervation perpendicular to secondary nerves (mainly almost parallel to secondary nerves). Flowers ♀ and ♂ (and ⚥ ?), staminodes quadrangular to spatulate (linear), fruit up to 10 cm in diam. (up to 6.5 cm), seeds pale yellow with brownish spots (dark brown), scar broad (narrow).

22. P. sylvatica Baehni, 1942, 294 — *Lucuma sessiliflora* White, Proc. Roy. Soc. Qld 47, 1936, 68, non *Pouteria sessiliflora* (Sw.) Poir., Baehni, 1942, 248.

Small trees. Branchlets terete, c. 3 mm in diam., densely ferruginously tomentose at tips only, glabrescent, terminal buds conoid, c. 4 mm long, ferruginously tomentose. *Leaves* scattered, subobovate, 4—8 by 2—3.8 cm, shortly and bluntly acuminate, acumen c. 2 mm long, sometimes rounded to obtuse, angle of leafbase less than 90°, base slightly decurrent; chartaceous to thin coriaceous, first densely ferruginously tomentose on either side, ultimately glabrous and nitidous, brownish when dry above, densely ferruginously tomentose and glabrescent below; midrib impressed above, prominent below, secondary nerves 3—6, ascending at an angle of 50°—60°, slightly curved, near margins diminishing until inconspicuous above, prominulous below, tertiary nerves irregularly reticulate or indistinctly transverse, rather inconspicuous at either side; petioles c. 1 cm long, shallowly canaliculate above, rounded below, ferruginously tomentose on either side, glabrescent. *Flowers* solitary, axillary, sessile. Outer *sepals* ovate, c. 4.5 by 3.5 mm, subacuminate, connate at base, ferruginously sericeous on either side, the inner ones oblong, c. 6 by 3.5 mm, obtuse, with minutely and irregularly undulate membranous margins. *Corolla* c. 8.5 mm long in bud (f. White 1 cm long), tube c. 6.5 mm long, lobes c. 2 by 2.5 mm, trapezoid to truncate, slightly outwardly curved. *Stamens* inserted just below the throat of the corolla, anthers ovoid, c. 1 mm long, subsessile. *Staminodes* lanceolate, c. 1.5 by 0.5 mm, acuminate, margins submembranous. *Ovary* subglobose, c. 2 by 2 mm, densely ferruginously vil-

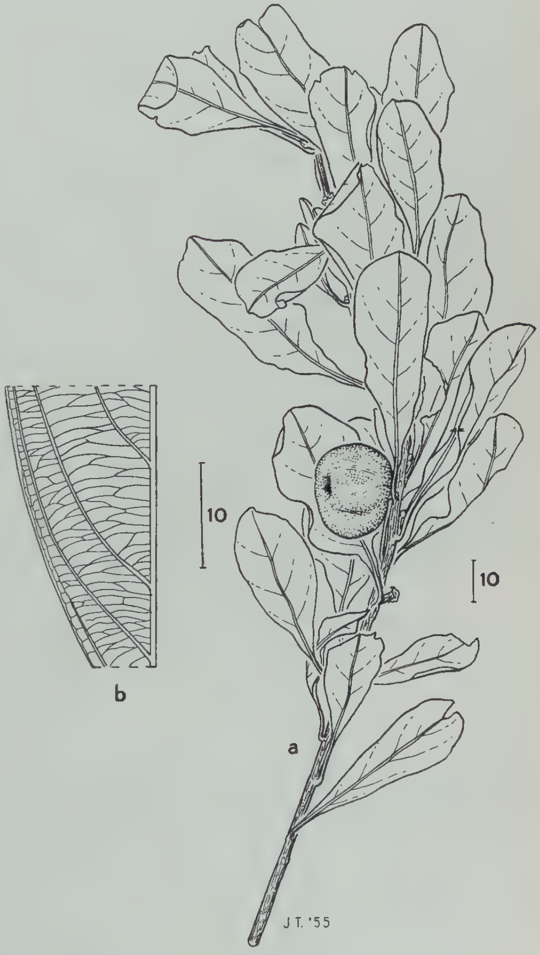

Fig. 9. *P. paucinervia,* a. branchlets with leaves and fruits, b. part of leaf showing secondary and tertiary nerves. (from *Buwalda 6503*).

lous, ovules inserted in upper half of cells; style cylindrical, c. 6.5 mm long, densely ferruginously villous up to c. 4 mm from base, stigma distinct. *Fruits* not seen.

Type specimen: *Brass 2088* in BRI.

Distr.: Australia (North Queensland).

AUSTRALIA. Queensland, Mt Demi, in high rain forest, alt. 900 m: *Brass 2088* (A, BRI, P), small tree on summit of mountain, fl. Febr.

23. P. paucinervia Erlee, nov. sp. — *Pag. 503 and f. 9.*

Trees, up to 15 m. Branchlets terete, 2—5 mm in diam., greyish-brown, glabrous except for tips of branchlets and young leaves which are reddish-brown tomentose. *Leaves* obovate to spatulate, 4—8 by 1—3 cm, apex rounded to obtuse, angle of leafbase less than 90°, base decurrent; chartaceous, young leaves reddish-brown tomentose on either side, adult ones reddish-brown appressedly tomentose, glabrescent, sometimes underside of midrib and secondary nerves excepted; midrib impressed and minutely crested above, prominent below, secondary nerves 4—6, ascending at an angle of 30°—40°, slightly curved, near margins reticulate, sometimes archingly joined by some thickened tertiary nerves, prominulous on either side, tertiary nerves transverse, mutually parallel, prominulous on either side; petioles 3—5 mm long, flat and minutely keeled above, rounded below, reddish-brown tomentose, glabrescent. *Inflorescences* and *flowers* unknown. *Fruits* depressedly globose, 1.5—2 by 1.5—2 by 1.2—1.5 cm when dry, reddish-brown tomentose, glabrescent, sepals 5, persistent in fruit, ferruginous tomentose without, glabrous within, pedicel c. 0.5 cm long, c. 0.2 cm in diam.; seeds 4 (sometimes 5?), ovoid, c. 1.3 by 1.1 by 0.8 cm, carinate, testa thin, brownish, scar broadly ovate, c. 1 by 0.7 cm, cotyledons thick, albumen none, radicle exserted.

Type specimen: *Buwalda 6503* in L.

Distr.: Malay Peninsula and Sumatra.

MALAY PENINSULA. Johore, Siwyai Tementang, Mawai, low alt.: *Ngadiman SF 34721* (SING), tree 15 m, fr. brown, Jan.

SAMATRA. Riouw distr., uplands of Indragiri river, Muata Pedjanki, in primary forest: *Buwalda 6503* (A, BO, L, PNH, SING), fl. with white milky juice, fr. brown-green; ibidem, alt. 60 m: *NIFS bb 27490* (A, L, SING), fr. April.

Remarks: On account of the small number of secondary nerves the specific epithet *paucinervis* has been introduced.

24. P. solomonensis van Royen, Blumea VIII, 2, 1957, 427 — *Planchonella sessiliflora* White, Journ. Arn. Arb., 31, 1, 1950, 108 — *Fig. 10.*

Trees, c. 27 m high. Branchlets terete, c. 3 mm in diam., glabrous (f. White near the tips minutely greyish tomentose and glabrescent), brownish when dry. *Leaves* subopposite, also along mature branchlets, oblong to lanceolate, 3.5—15 by 0.8—5.3 cm, apex bluntly acuminate, base cuneate, angle less than 90°, shortly decurrent; chartaceous to thin coriaceous, glabrous on either side, nitidous above, somewhat dull below; midrib prominulous on either side, secondary nerves 5—13, ascending at an angle of c. 50°, slightly curved, near margins diminishing until inconspicuous or sometimes archingly joined by some thickened tertiary nerves, impressed above, prominulous below, tertiary nerves minutely reticulate, nearly in-

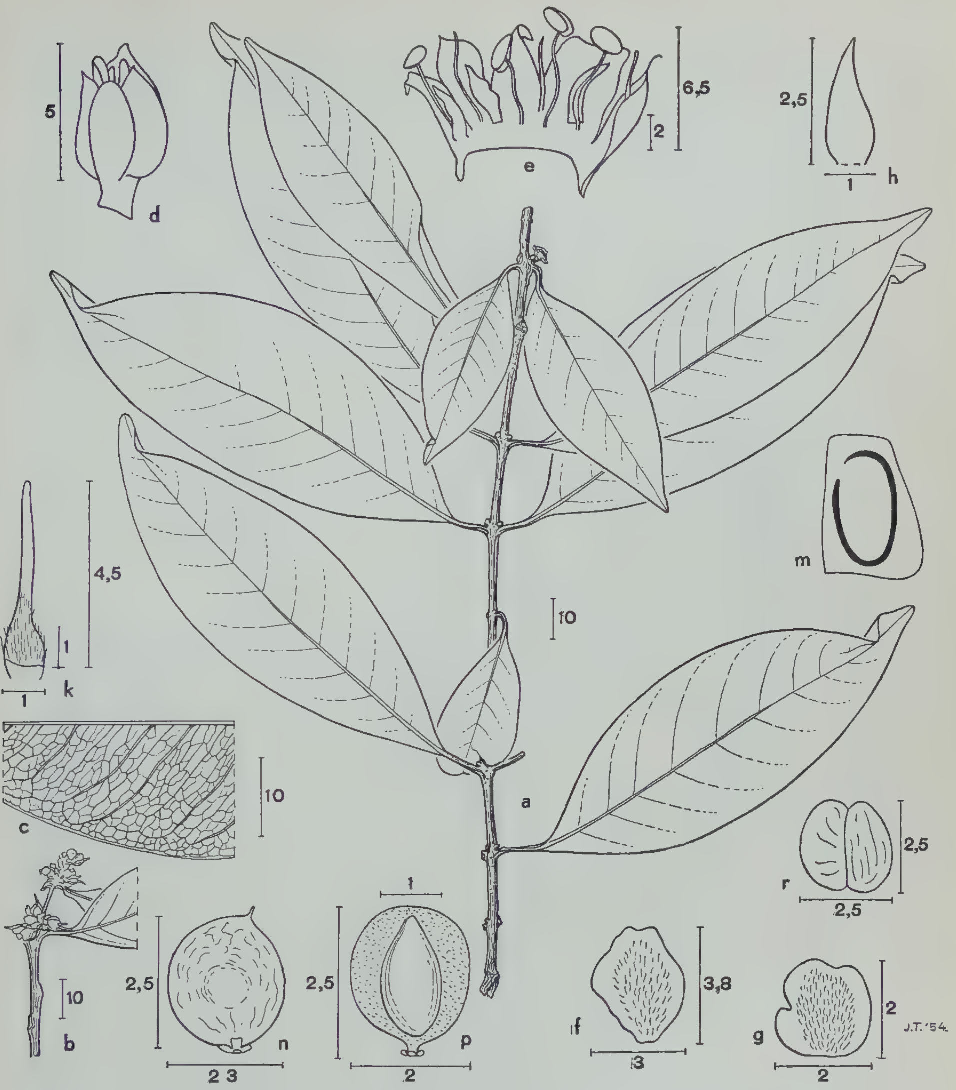

Fig. 10. *P. solomonensis,* a. branchlet with leaves, b. idem, with flowers, c. part of leaf showing secondary and tertiary nervation, d. flowerbud without sepals, e. corolla with stamens and staminodes, f. outer sepal, outside, g. inner sepal, outside, h. staminode, k. pistillum, m. part of ovary with ovulum, n. fruit, p. seed in fruit, dorsal view, r. cotyledons. (a, c, n–r. from *Brass 3092,* b, d–m. from *Walker BSIP 327*).

conspicuous above, faint below; petioles 6—10 mm long, canaliculate above, rounded below, glabrous. *Flowers* in 1—6-florous, axillary clusters, nearly sessile. *Sepals* orbiculate to ovate, 2—3.8 by 2—3 mm, apex rounded, connate at base, brownish sericeous without except for the minutely, ciliate and membranous margins, glabrous within. *Corolla* 5—6.5 cm long, tube

1—2 mm long, lobes oblong, 4—4.5 by c. 2.5 mm, apex rounded to obtuse, slightly outwards curved. *Stamens* inserted in base of tube, c. 6 mm long, filaments slender, adnate to the tube up to 1.5 mm from base, subulate, apex attenuate, c. 3.5 mm long, anthers oblong, c. 2.5 mm long, subbasifix. *Staminodes* lanceolate, 2—2.5 by c. 1 mm, inserted in the throat of the corolla. *Ovary* conoid, c. 1 by 1 mm, ferruginously villous, obscurely 5-grooved, ovules inserted in upper half of cells, tapering into the style which is cylindrical, c. 3.5 mm long, ferruginously villous at base, glabrous and attenuate at tip, stigma very minute. *Fruits* globose, c. 2.5 by 2.3 by 2 cm, glabrous, style persistent, pericarp thin, purple; seeds solitary, obovoid, laterally flattened, c. 2.5 by 2 by 1.8 cm, testa thin, scar almost occupying the whole surface of the seed leaving a narrow, nitidous part of about 2.5 by 0.9 cm, acuminate at apex, rounded at base, cotyledons thick, albumen none, radicle not seen.

Type specimen: *Walker BSIP 237* in BRI.

Distr.: Solomons.

SOLOMONS. Guadalcanal: Beaufort Bay, Kimbau river, rainforest, alt. 240 m: *Walker BSIP 237* (BRI), tree 27 m, buttresses absent, but slight flutes present ,fl. Febr. — San Cristoval: Star Harbour, on rarbour foreshores: *Brass 3092* (BO, BRI), a spreading thickly foliaged tree, fr. green, Oct.

Remarks: As the combination *Pouteria sessiliflora* (Sw.) Poir. already exists a new name had to be chosen.

This species with its subopposite leaves, sessile flowers and floral structure comes closest to *Pouteria lauterbachiana*. The latter differs by having on the whole larger leaves (10—20 by 6—8 cm) and by the shape of its fruit and different fruit characters.

25. P. endlicheri (Montr.) Baehni, 1942, 305 — *Sapota endlicheri* Montr., Fl. Ile Art. in Mém. Acad. Lyon 10, 1860, 228 — *Planchonella endlicheri* (Montr.) Guillaumin & Beauvisage, Ann. Soc. bot. Lyon 38, 1913/1914, 101 — *Labatia macrocarpa* Pancher & Sebert, Bois Nouv. Calédonie 1874, 196 — *Chrysophyllum ? macrocarpum* (Panch. & Seb.) Baillon, Bull. Soc. linn. Paris 2, 1891, 901: Guillaumin, Ann. Mus. col. Marseille 19, 1911, 185 — *Planchonella petitiana* Pierre, Not. bot. Sapot., 1890, 36, *nomen*; Dubard, Ann. Mus. col. Marseille 20, 1912, 51 — *Sideroxylon petitianum* Pierre, Not. bot. Sapot., 1890, 36, *in synon.* — *Fig. 11.*

A high tree. Branchlets terete, up to 7 mm in diam., glabrous, brownish to greyish when dry. *Leaves* crowded towards tips of branchlets, oblong-obovate, 6.5—15(—20) by 2.5—5.5 cm, rounded to obtuse or sometimes bluntly and indistinctly acuminate at apex, angle of leafbase less than 90°, tapering into the petiole; thin coriaceous, glabrous on either side, nitidous and olivaceous above, somewhat dull and brownish olivaceous below; midrib impressed above, prominent below, secondary nerves 20—30, ascending at an angle of 60°—85°, straight, reticulate near margins, delicate and about

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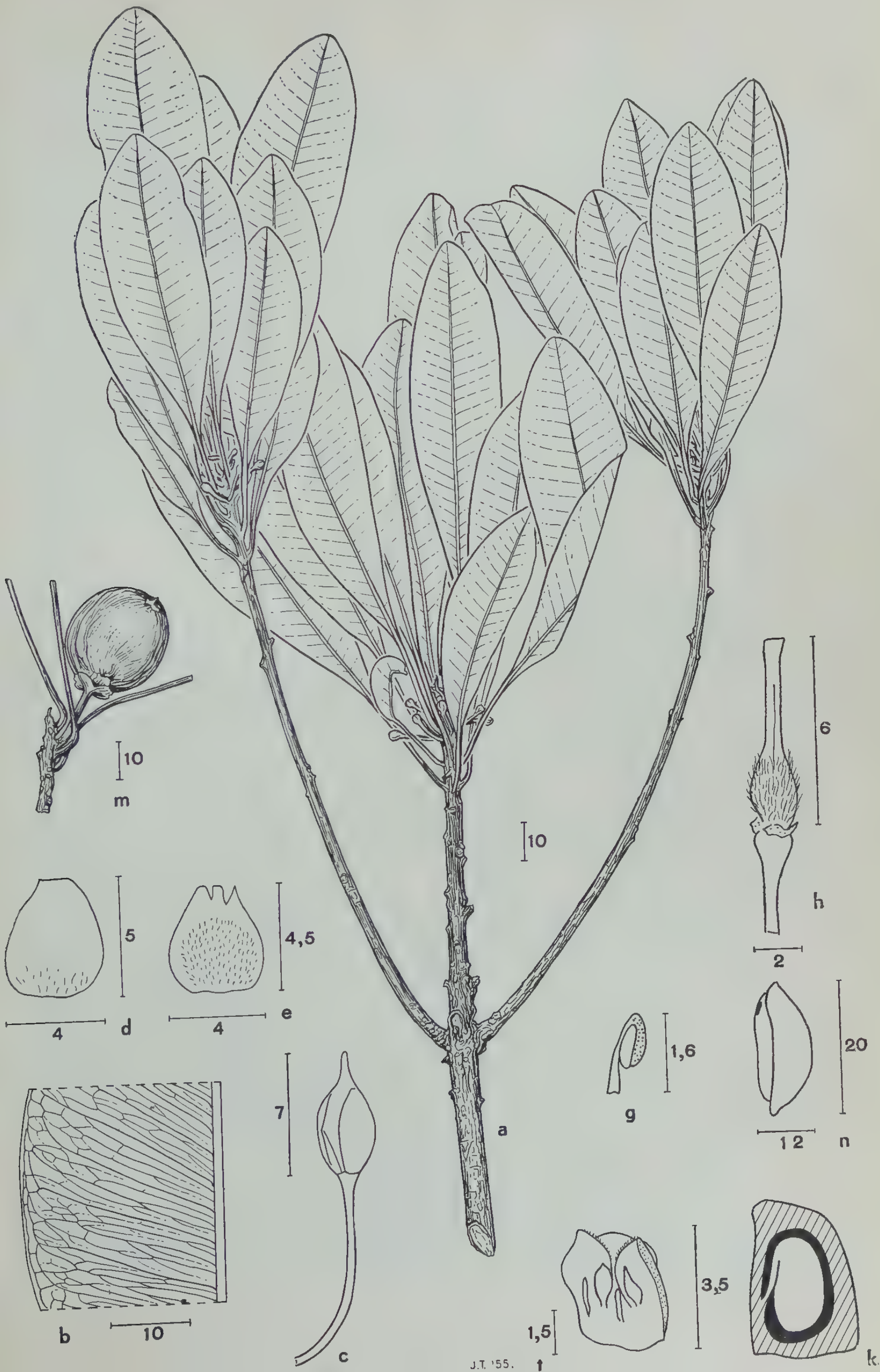
Fig. 11. *P. endlicheri*, a. branchlets with leaves and flowerbuds, b. part of leaf showing secondary and tertiary nerves, c. flowerbud, d. outer sepal, outside, e. idem, inside, f. part of corolla showing stamens and staminodes, g. stamen, h. pistillum, k. part of ovary with ovulum, m. fruit, n. seed. (a. from *Cribs 1688*, b, m. from *Balansa 3466*, c–n. from *Franc 1643 A*, n. from *Vieillard 194*).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as prominent as the tertiary ones on either side, tertiary nerves mainly parallel to the secondary ones, reticulate near margins, faint on either side; petioles 2.5—3.5(—4.5) cm long, flat above, rounded below, glabrous. *Flowers* solitary or 2 per axil, in bud c. 7 mm long; pedicels 1—1.6(—3—4) cm long, glabrous, grooved. *Sepals* ovate, 4.5—5 by c. 4 mm, rounded to obtuse at apex, connate at base, outer ones glabrous on either side, inner ones minutely appressedly yellowish sericeous without, glabrous within, persistent in fruit. *Corolla* in bud c. 3.5 mm long, sometimes absent, tube c. 1.5 mm long, lobes ovate, c. 2 by 2 mm, rounded at apex. *Stamens* inserted just below the throat of the corolla, in bud c. 1.6 mm long, filaments subulate, c. 1.5 mm long, attenuate at apex, anthers oblong, c. 1 mm long, subbasifix. *Staminodes* inserted in the throat, petaloid, c. 1.3 mm long (f. Baehni sometimes absent). *Ovary* conoid, c. 2 by 2 mm, densely ferruginously villous, 4—5-celled, ovules inserted in lower half of cells; style cylindric, c. 4 mm long, attenuate at apex, grooved, glabrous. *Fruits* ovoid to globose, sometimes obovoid, 3—3.5 by 2.8—3 by 2—2.3 cm when dry, pointed at apex by the persistent style, glabrous, brownish to olivaceous, pericarp thick; seeds 3(—5), ellipsoid, laterally flattened, c. 2 by 1.2 by 0.8 cm, testa 1—2 mm thick, yellowish or brownish, scar oblong, c. 1.8 by 0.4 cm, cotyledons ovoid, albumen membranous.

Type specimen: *Moutrouzier 137* in P.

Vern. name: azou.

Distr.: New Caledonia.

NEW CALEDONIA. Mt Dore: *Vieillard 194* (P), tree, fr.; Prony, seashores, on lateric soil: *Cribs 1688* (P), tree, fl. white, Aug.; Yakoné: *d'Aleizette 571 NC* (P), fl. Aug.; forest situated above basin of Dothio: *Balansa 3466* (P), fr. Jan.; in moist forest, Dothio river: *Franc 1643 A* (P), tree, fr. pulpy, fl. Jan.; basis of Mont d'Or: *Hennecart 226* (L), tree 5—6 m, fr. July; without loc.: *Petit 19* (P), fr.; ibidem: *Pancher N. C. 564* (P), tree 6 m, fr. July; ibidem: *Roberts 4* (MEL, P); ibidem: *Baumann 15201* (Z), fr. Aug. — Ile Art, without loc.: *Montrouzier 137* (P) ,fl.

26. P. castanosperma (White) Baehni, 1942, 295 — *Chrysophyllum castanospermum* White, Qld Dept. Agric. Bot. Bull. 21, 1919, 12 — *Lucuma castanosperma* (White) White & Francis, Proc. Roy. Soc. Qld 35, 1923, 74 — *Fig. 12.*

Medium sized trees, up to 15 m high. Branchlets terete, 2—4 mm in diam., glabrous (f. Baehni reddish puberulous). *Leaves* lanceolate, 2.5—12 by 0.5—5 cm, apex tapering acuminate, acumen 5—10 mm long, angle of leafbase less than 90°, base narrowed into petiole; chartaceous, glabrous and nitidous on either side; midrib impressed above, prominent below, secondary nerves c. 10, ascending at an angle of 50°—60°, straight but curved and reticulate near margins, delicate, about as prominent as tertiary ones, tertiary nerves parallel to secondary nerves, reticulate near margins; petioles 3—5 mm long, glabrous. *Flowers* in 2—3-florous axillary clusters or solitary; pedicels 10—18 mm long, glabrous. *Sepals* broadly ovate,

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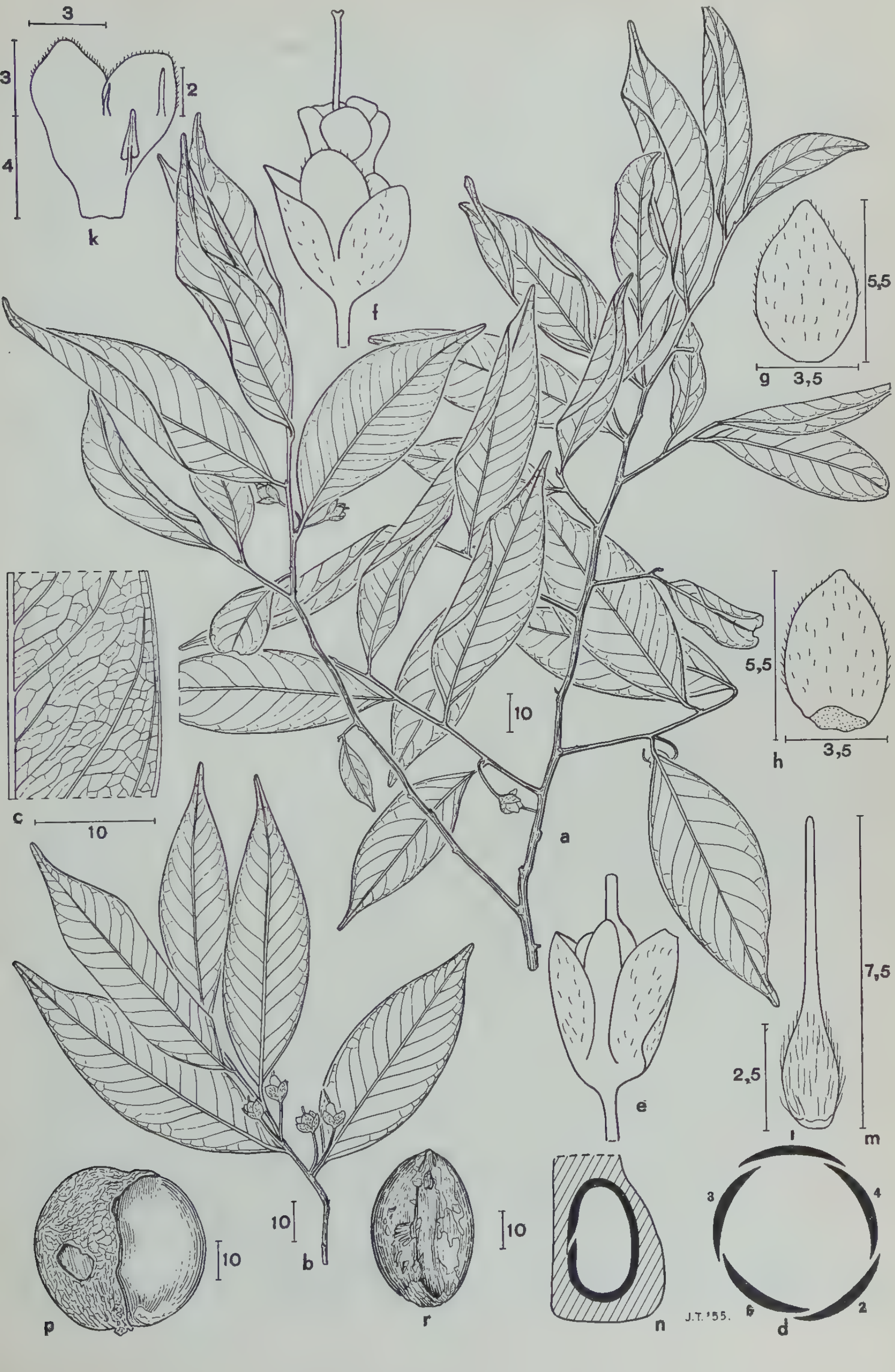
Fig. 12. *P. castanosperma,* a, b. branchlet with leaves and flowers, c. part of leaf showing secondary and tertiary nerves, d. diagram of calyx, e. flowerbud, f. flower, g. outer sepal, outside, h. idem, inside, k. corolla with stamen and staminode, m. pistillum, n. part of ovary, longitudinal section, p. fruit, r. seed, ventro-lateral view. (a–c, f, k, p, r. from *Brass 2236,* d, e, g, h, m, r, p. from *White s.n.*).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c. 5.5—7 by 3.5—5.5 mm, obtuse, connate at the base, ferruginously sericeous on either side, persistent in fruit. *Corolla* 7—12 mm long, tube c. 4 mm long, constricted about the middle, lobes rotundate-ovate, c. 3 mm in diam., rounded to obtuse, margins minutely ciliate, glabrous on either side (f. White, corolla tube hirsute inside towards the base). *Stamens* inserted well below the throat of the corolla, c. 2.5 mm long, filaments slender, less than 1 mm long, attenuate towards tips, anthers ovoid, c. 2 mm long, subbasifix. *Staminodes* inserted just below the throat of the corolla, subulate, c. 2 mm long, acute. *Ovary* 5-lobed, conoid, 1.5—2.5 mm in diam., densely ferruginously villous, ovules laterally attached; style cylindrical, narrowed at apex, 7.5—11 mm long, persistent in fruit, stigmas 5, very minute. *Fruits* ovoid or subglobose, 3—4 by 1.5—4.5 by 1.5—3 cm when dry, pericarp purple or becoming bluish-black, glabrous; seeds 1 or 2, 2.5—4 by c. 3 by c. 2.5 cm, oblong when solitary, subangular when two seeds are present, testa thick, nucamentaceous, scar oblong, 1.5—3.5 by c. 1.2 cm, hilum irregularly verruciform, embryo oblong and angular, cotyledons thick, fleshy, albumen none, radicle not prominent.

Type specimen: *White s.n.* in BRI (found near Malanda, Jan. 1918).

Vern. name: milky plum.

Distr.: Australia (Queensland).

AUSTRALIA. Queensland, Cook distr., Mossman river, in regrowth along roadside on N. bank, alt. c. 6 m: *Smith & Webb 4014* (BRI, L), small tree, c. 6 m, fr. becoming bluish black, Sept.; Boonjee, near Malanda, in rain forest, alt. c. 720 m: *Blake 15228* (BRI), small tree, fr. immature, green, Aug.; Malanda, in rain forest, alt. 720 m: *Blake 15174* (BRI), small shrub, fr. Aug.; ibidem: *White s.n.* (BRI), type specimen, fl. fr. Jan.; Gadgarra: *White 1578* (BRI), fr. March — Atherton district: *Carry s.n. (BRI)*, juv. fr.; Atherton Tableland, Boonjee: *White s.n.* (BRI), juv. fl. Jan.; Daintree river, fringes of rain forest: *Brass 2236* (A, BRI, P), small tree, fl. March; head of Russell river waters, Par. Bartle Frère, alt. 540 m: *Fraser 51* (BRI), fr.; Lake Barrine, in rain forest, alt. 500 m: *Kajewski 1350* (A, BRI, P, S, SING, Z), small sized tree up to 15 m, fr. dark purple when ripe, oval with a long spike from base, fr. Nov.

27. P. ? garcinioides (Krause) Baehni, 1942, 338 — *Sideroxylon garcinioides* Krause, Engl. Bot. Jahrb. 58, 1923, 477 — *Lucuma garcinioides* (Krause) H. J. Lam, 1932, 568, t. 129.

As no material of this species could be obtained the Latin description given by Krause is reproduced here:

Arbor erecta 20—25 m alta ramis subteretibus validiusculis glabris cortice brunneo vel griseo-brunneo ruguloso obtectis. Foliorum petiolus supra applanatus atque late canaliculatus 8—15 mm longus; lamina rigida subcoriacea utrinque glaberrima in vivo pallide viridis nitida late obovata vel obovato-spathulata rarius subelliptica apice acumine abrupto acuto 8—10 mm longo praedita, basin versus cuneatim angustata, 1.5—2 dm longa, usque ad 1 dm lata, nervis lateralibus primariis 14—18 adscendentibus utrinque subaequaliter prominentibus percursa. Flores in axillis fasciculati, 6—8 mm longe pedicellati; calycis laciniae 3—3.5 mm longae ovatae subacutae extus densiuscule pilosae intus glabrae, basi breviter connatae; corolla atque stamina nondum nota; ovarium subturbinatum 2 mm altum pilosum stilo glabro aequilongo coronatum. Fructus obovoideo-globosus, siccus circ. 2 cm diametiens, rubro-griseus.

Type specimen: *Ledermann 10728* in B.
Distr.: New Guinea.

NEW GUINEA. Northeastern New Guinea, Sepik river, near Malu, alt. 20 m: *Ledermann 10728, ex litt.*, fr. Jan.

Remarks: As the type material is destroyed during the 1942 bombardment of Berlin and no other material turned up it is at the moment impossible to decide whether it represents a species of Pouteria or Planchonella.

28. P. ? lucida (Burck) Baehni, 1942, 410 — *Lucuma lucida* Burck in H. J. Lam, 1925, 226, f. 61; idem, 1927, 477 — *Sideroxylon ? lucidum* Burck in msc.

Trees? Branchlets terete, 2.5—5 mm in diam., glabrous, terminal bud conoid, c. 5 mm long, greyish yellowish sericeous. *Leaves* scattered, oblong-lanceolate, 12—20 by 4.5—7.5 cm, apex obtusely acuminate, acumen up to 10 mm long, base cuneate, tapering shortly into petiole; thinly coriaceous, margin undulate, glabrous and nitidulous on either side; midrib prominulous above, prominent below, secondary nerves 8—10, ascending at an angle of c. 60°, curved, archingly joined or diminishing until inconspicuous, prominent on either side, tertiary nerves transverse, few, prominulous above, prominent below; petioles 1—2.1 cm, flattened above, rounded below, glabrous. *Inflorescences* and *flowers* unknown. *Fruits* depressedly globose, up to 4.5 by 6.5 cm, 5-seeded, glabrous, pericarp thick, fleshy; seeds naviculate, 2.7—4.1 by 1.7—2.5 by 1.1—1.5 cm, albumen subcopious, cotyledons thin, radicle cylindrical, exserted.

Type specimen: *Jaheri 139* in BO.
Distr.: Kai Islands.

KAI. Toeal: *Jaheri 139* (BO, L), fl.

Remarks: According to Lam (1925, 227), the fruits which he found in the Buitenzorg herbarium belong to this species. As, however, no complete certainty exists about this relation *Lucuma lucida* Burck is provisionally inserted in Pouteria though the embryo described above rather point to Planchonella.

Doubtful species

1. P. ? amieuanum (Guill.) van Royen, nov. comb. — *Chrysophyllum amieuanum* Guillaumin, Bull. Mus. Hist. nat., sér. 2, 22, 1950, 520.

Type specimen: *Sarlin 279* in P.
Distr.: New Caledonia.

Remarks: This species closely resembles *P. wakere* but as no fruits are known it is only provisionally placed in Pouteria.

2. P. ? obpyriformis (Bailey) Baehni, Candollea 9, 1942, 412 — *Lucuma obpyriformis* Bailey, Qld Agric. Journ. 15, 1904, 493.

Type specimen: *Meston Expedition s.n.* in BRI.
Distr.: Australia.

Remarks: Since no material could be obtained and no description of the embryo has been given in the original description this species is inserted here.

3. P. ? petaloides (H. J. Lam) Baehni, 1942, 328 — *Lucuma petaloides* (H. J. Lam) H. J. Lam, 1927, 477 — *Planchonella petaloides* H. J. Lam, 1925, 196, f. 53 (*partim*).

Type specimen: *without collector's name 24,* from Amboina, sub signo IV. D. 91 in herb. BO.

Distr.: Amboina.

Remarks: The type material is rather fragmentary and it is not certain whether this species represents a *Planchonella* or a *Pouteria.*

4. P. ? erringtonii (Dubard) Baehni, 1942, 416 — *Planchonella erringtonii* Dubard, Ann. Mus. col. Mars. 20, 1912, 60.

Type specimen: *Errington de la Croix 13* in P.

Distr.: Malay Peninsula.

Remarks: According to van Royen in his publication on Planchonella this species belongs to Pouteria. The material, however, is so scanty that the insertion in Pouteria is doubtful.

5. Lucuma ferruginea Zippel, in Macklot, Bijdr. Natuurk. Wetensch. 5, 1830, 178, *nomen nudum*; H. J. Lam, 1925, 232.

Type specimen: *?*

Distr.: New Guinea.

Remarks: This species has never been included in Pouteria but as the generic name Lucuma has been anticipated by Pouteria this species therefore is transferred to Pouteria as well. The actual combination, however, is not made as no material is known and the name published by Zippel is a nomen nudum.

6. Lucuma lanceolata Zippel, in Macklot, Bijdr. Natuurk. 5, 1830, 178, *nomen nudum*; H. J. Lam, 1925, 232.

Type specimen: *?*

Distr.: New Guinea.

Remarks: What has been stated for *Lucuma ferruginea* applies to this species as well.

7. Lucuma tomentosa Zippel, in Macklot, Bijdr. Natuur. 5, 1830, 178, *nomen nudum*; H. J. Lam, 1925, 232.

Type specimen: *?*

Distr.: New Guinea.

Remarks: The same can be said as has been said in *Lucuma ferruginea* and *L. lanceolata.*

8. P. ? lecardii (Baillon) Baehni, 1942, 309 — *Planchonella lecardii* (Baillon) Guill.

Type specimen: *Lécard s.n.* in P.

Distr.: New Caledonia.

Remarks: Owing to the fragmentary material this species is difficult to place.

Excluded species

1. *P. anteridifera* (White & Francis) Baehni, 1942, 381 = Planchonella anteridifera (White & Francis) H. J. Lam, 1927, 471.
2. *P. arnhemica* (F. v. M.) Baehni, 1942, 286 = Planchonella arnhemica (F. v. M.) van Royen, Blumea VIII, 2, 1957, 397, f. 43.

3. *P. australis* (R. Brown) Baehni, 1942, 308 = Planchonella australis (R. Brown) Pierre, Not. bot. Sapot., 1890, 36.
4. *P. baillonii* (Zahlbr.) Baehni, 1942, 375 — Planchonella baillonii (Zahlbr.) Dubard, 1912, 57.
5. *P. baueri* (Montr.) Baehni, 1942, 329 = Planchonella baueri (Montr.) Dubard, 1912, 53.
6. *P. brachyloba* (Domin) Baehni, 1942, 341 = Planchonella brownlessiana (F. v. M.) van Royen, Blumea VIII, 2, 1957, 343, f. 33.
7. *P. brousmichei* (Baillon) Baehni, 1942, 340 = Planchonella brousmichei (Baillon) Dubard, 1912, 44.
8. *P. brownlessiana* (F. v. M.) Baehni, 1942, 318 = Planchonella brownlessiana (F. v. M.) van Royen, l. c., 343, f. 33.
9. *P. cinerea* (Pancher) Baehni, 1942, 339 = Planchonella cinerea (Pancher) van Royen, l. c., 281, f. 13.
10. *P. clemensii* (Lec.) Baehni, 1942, 310 = Planchonella clemensii (Lec.) van Royen, l. c., 375, f. 39.
11. *P. clementis* (H. J. Lam) H. J. Lam, Blumea 5, 2, 1943, 337 = Planchonella clementis H. J. Lam, Boissiera 7, 1943, 97.
12. *P. ? contermina* (Pierre) Baehni, 1942, 406 = Planchonella contermina Pierre in Dubard, 1912, 44.
13. *P. cotinifolia* (A. DC) Baehni, 1942, 377 = Planchonella cotinifolia (A. DC) Dubard, 1912, 56.
14. *P. densinervia* (Krause) Baehni, 1942, 342 = Planchonella densinervia (Krause) H. J. Lam, 1932, 562, t. 114.
15. *P. discolor* (Baillon) Baehni, 1942, 342 = Planchonella linggensis (Burck) Pierre, Not. bot. Sapot., 1890, 35; van Royen, l. c., 384.
16. *P. duclitan* (Blanco) Baehni, 1942, 283 = Planchonella nitida (Blume) Dubard, 1912, 62.
17. *P. ? dugulla* (Bailey) Baehni, 1942, 407 = Planchonella pohlmaniana (F. v. M.) Pierre ex Dubard, 1912, 47.
18. *P. ? eerwah* (Bailey) Baehni, 1942, 408 = Planchonella eerwah (Bailey) van Royen, l. c., 302.
19. *P. eluviicola* Baehni, 1942, 310 = Xantolis boniana (Dubard) van Royen, var. rostrata (Merrill) van Royen, l. c., 213.
20. *P. euphlebia* (F. v. M.) Baehni, 1942, 335 = Planchonella euphlebia (F. v. M.) Francis, Austr. Rainf. Trees, ed. 2, 1951, 448.
    - *P. euphlebia* (F. v. M.) Baehni, var. *cryptophlebia* White, Baehni, 1942, 335 = Planchonella euphlebia (F. v. M.) Francis, var. cryptophlebia (White) van Royen, l. c., 294.
    - *P. euphlebia* (F. v. M.) Baehni, var. *typica*, Baehni, 1942, 335 = Planchonella euphlebia (F. v. M.) Francis, var. euphlebia, van Royen, l. c., 293.
21. *P. firma* (Miq.) Baehni, 1942, 284 = Planchonella firma (Miq.) Dubard, 1912, 59.
    - *P. firma* (Miq.) Baehni, var. *microcarpa* (H. J. Lam) Baehni, 1942, 285 = Planchonella firma (Miq.) Dubard, var. microcarpa (Burck) H. J. Lam, 1925, 203.
    - *P. firma* (Miq.) Baehni, var. *typica* (H. J. Lam) Baehni, 1942,

285 = Planchonella firma (Miq.) Dubard, var. firma, van Royen, Blumea VIII, 2, 1957, 317.

22. *P. ? forbesii* (H. J. Lam) Baehni, 1942, 408 = Krausella forbesii (Moore) H. J. Lam, Boissiera 7, 1943, 92.
23. *P. francii* Baehni, 1942, 301 = *Achradotypus coriaceus* (Baillon) Lec. ex Guillaumin, Bull. Soc. bot. France 89, 1943, 222 = **Pycnandra ? coriacea** (Baill.) Vink, nov. comb.
24. *P. garberi* (Christ.) Baehni, 1942, 296 = Planchonella linggensis (Burck) Pierre, var. garberi (Christ.) van Royen, l. c., 387.
25. *P. hochreutineri* (H. J. Lam) H. J. Lam, Blumea 5, 2, 1943, 337 = Planchonella hochreutineri H. J. Lam, Boissiera 7, 1943, 92.
26. *P. howeana* (F. v. M.) Baehni = Planchonella myrsinoides (Cunn.) Blake in Francis, Austr. Rainf. Trees, ed. 2, 1951, 358.
27. *P. ? intermedia* (Baillon) Baehni, 1942, 409 = Chrysophyllum intermedium Baillon, Bull. Soc. linn. Paris 2, 1891, 898.
28. *P. ? kaernbachiana* (Engler) Baehni, 1942, 338 = Planchonella kaernbachiana (Engler) H. J. Lam, 1925, 200.
29. *P. kaniensis* (Krause) Baehni, 284 = Planchonella kaniensis (Krause) H. J. Lam, 1932, 565, t. 124.
30. *P. ? keyensis* (H. J. Lam) Baehni, 1942, 210 = Planchonella ? keyensis H. J. Lam, 1925, 197.
31. *P. koghiensis* Baehni, 1942, 295 = Planchonella dictyoneura (Baillon) Pierre, Not. bot. Sapot., 1890, 36.
32. *P. krausei* (H. J. Lam) Baehni, 1942, 322 = Planchonella krausei H. J. Lam, 1932, 561, t. 108.
33. *P. laetevirens* (Baillon) Baehni, 1942, 377 = Planchonella laetevirens (Baillon) Pierre in Dubard, 1912, 47.
34. *P. lamii* Baehni, 1942, 313 = Planchonella chrysophylloides H. J. Lam, 1932, 566, t. 126.
35. *P. ? lamprophylla* (Krause) Baehni, 1942, 333 = Planchonella lamprophylla (Krause) H. J. Lam, 1932, 564, t. 120.
36. *P. lasiantha* (Baillon) Baehni, 1942, 324 = Panchonella lasiantha (Baillon) Dubard, 1912, 58.
37. *P. ledermannii* (Krause) Baehni, 1942, 341 = Planchonella ledermannii (Krause) H. J. Lam, 1932, 561, t. 111.
38. *P. lifuana* (Baillon) Baehni, 1942, 300 = Planchonella lifuana (Baillon) Pierre ex Dubard, 1912, 45.
39. *P. ? macropoda* (H. J. Lam) Baehni, 1942, 410 = Planchonella macropoda H. J. Lam, 1932, 563, t. 117.
40. *P. maingayi* (Clarke) Baehni, 1942, 343 = Planchonella maingayi (Clarke) van Royen, l. c., 413.
41. *P. mindanaensis* (H. J. Lam) Baehni, 1942, 326 = Planchonella mindanaensis H. J. Lam, 1925, 207.
42. *P. moluccana* (Burck) Baehni, 1942, 327 = Planchonella moluccana (Burck) H. J. Lam, 1925, 200.
43. *P. monticola* (Krause) H. J. Lam, Blumea 5, 2, 1943, 337 = Planchonella monticola (Krause) H. J. Lam, 1932, 561, t. 112.
44. *P. myrsinoides* (Cunn.) Baehni, 1942, 303 = Planchonella myrsinoides (Cunn.) Blake in Francis, Austr. Rainf. Trees, ed. 2, 1951, 358.

45. *P. ? nebulicola* (H. J. Lam) Baehni, 1942, 411 = Planchonella nebulicola H. J. Lam, 1932, 563, t. 118.
46. *P. obovata* (R. Br.) Baehni, 1942, 324 — Planchonella obovata (R. Br.) Pierre, Not. bot. Sapot., 1890, 36.
47. *P. ? obovoidea* (H. J. Lam) Baehni, 1942, 412 = Planchonella obovoidea H. J. Lam, 1925, 207.
48. *P. oxyedra* (Miq.) Baehni, 1942, 315 = Planchonella linggensis (Burck) Pierre, Not. bot. Sapot., 1890, 35; van Royen, Blumea VIII, 2, 1957, 384.
49. *P. pedunculata* (Hemsl.) Baehni, 1942, 286 = Planchonella pedunculata (Hemsl.) H. J. Lam & D. A. Kerpel, Blumea 3, 1939, 258.
50. *P. pinifolia* (Baillon) Baehni, 1942, 376 = Planchonella pinifolia (Baillon) Dubard, 1912, 57.
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53. *P. rigidifolia* (Krause) Baehni, 1942, 319 = Planchonella rigidifolia (Krause) H. J. Lam, 1932, 560, t. 107.
54. *P. rubicunda* (Baillon) Baehni, 1942, 331 = Planchonella rubicunda (Pierre) Dubard ex Guillaumin, Ann. Mus. col. Mars. 1911, 287.
55. *P. saligna* (Moore) Baehni, 1942, 331 = Planchonella saligna Moore, Journ. Linn. Soc. 45, 1921, 355.
56. *P. sarcospermoides* (H. J. Lam) H. J. Lam, Blumea 5, 2, 1943, 337 = Planchonella sarcospermoides H. J. Lam, Boissiera 7, 1943, 94.
57. *P. schlechteri* (Krause) Baehni, 1942, 293 = Planchonella schlechteri (Krause) H. J. Lam, 1932, 561, t. 109.
58. *P. sebertii* (Pancher) Baehni, 1942, 297 = Planchonella sebertii (Pancher) Dubard, 1912, 58.
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67. *P. ? vieillardii* (Baillon) Baehni, 1942, 414 = Planchonella vieillardii (Baillon) Dubard, 1912, 58.
68. *P. viscosa* Baehni, 1942, 414 = Planchonella reticulata (Baillon) Pierre in Dubard, 1912, 45.
69. *P. vrieseana* (Pierre) Baehni, 1942, 336 = Planchonella vrieseana (Pierre) Dubard, 1912, 59.

Latin diagnosis of the new taxa

1. **Pouteria luzoniensis** (Merrill) Baehni, var. **papuana** Erlee, nov. var. — *Cf. pag. 463 et f. 3 m–p.*

Differt a var. luzoniensis petiolis brevioribus, 0.3—1 cm, corolla c. 3 mm longa, tubo c. 1.5 mm longo, lobis c. 1.5 × 1.5 mm.

Typus: *Versteegh 67* in L.

2. **Pouteria celebica** Erlee, nov. sp. — *Cf. pag. 483 et f. 7.*

Arbor mediocris. Ramuli teretes, c. 5 mm diam. Folia sparsa lanceolata, 11—20.5 × 5—6 cm, late lanceolata, basi decurrentia, apice acute vel obtuse acuminata, coriacea, juvenilia utrinque ferrugineo-tomentosa, adulta glabra, nitida; nervi secundarii 12—14, graciles, angulo 50°—60° de costa subtus prominenti adscendentes, prope margines distincte arcuatim conjuncti; petioli c. 2 cm longi, supra deplanati, subtus convexi. Inflorescentiae 1—6-flori; pedicelli 5—9 mm longi puberuli; sepala basi connata, rotundata, 5—5.5 mm, coriacea, extus brunneo-puberula, intus glabra; corolla in flore juvenili 3.5—4 mm longa, tubo brevi, extus ferrugineo-puberulo, lobi obtusi; stamina in alabastro brevi-filamentia 3—3.5 mm longa, antherae oblongae acutae, 2.5—3 mm longae; staminodia paulo supra stamina inserta, lanceolata, acuta, 2—3 mm longa; ovarium conoideum, longe pilosum, in stylum, sulcatum gradatim contracta, 4—? 5-loculatum, ovula in loculorum parte superiore affixa. Fructus ignotus.

Typus: *Kjellberg 2325* in L.

3. **Pouteria doonsaf** van Royen, nov. sp. — *Cf. pag. 486 et f. 8.*

Arbores, c. 17 m. altae. Ramuli crassi, 3—8 mm diam., sericei indumento canescenti vel nigro-canescenti, glabrescentes, cicatricibus albis ad 6 mm diam. Folia sparsa vel in ramulorum apicibus subconferta, elliptica ad subobovata, 16—36 × 6—15 cm, apice obtusa vel obtuso-acuminata, acumine 2—12 mm, basi cuneata brevissime decurrentia, subcoriacea, subtus in costa sparse pilosa ceterum utrinque glabra, supra nitidula, subtus opaca, costa supra canaliculata et simul minute carinata, subtus prominens, sed in foliis maximis supra in parte basali solum carinata, subtus pilis sparsis albis, nervi secundarii 9—15, sub angulo c. 60° adscendentes, erecti sed in parte apicali curvati, diminuentes et ultimo inconspicui, vel arcuatim conjuncti interdum nervis tertiariis incrassatis connecti, supra canaliculati, subtus prominentes; nervi tertiarii transversi, plerumque curvati, supra prominuli, subtus prominentes; petioli 1.5—5 cm, supra canaliculati, subtus canescenti-sericei. Flores bini vel singuli, pedicelli angulares, 2—3 mm, sericei, indumento albido-viridi, in fructu usque ad 10 × 5 mm. Sepala late deltoideo ad ovata, 1.5—2.5 × 1—1.5 mm, subobtusa, utrinque flavescenti-sericea, interiora intus in parte basali glabra. Corolla 2—3 mm, lobis

1.5—2.5 × 1—1.5 mm, deltoideis ad ovatis, subobtusis. Stamina rudimentaria solum a mihi visa, prope corollae basin inserta. Staminodia quadrangularia ad spatulata, c. 0.8 mm, apiculata, margine irregulariter dentata, intus carinata. Ovarium disciforme, c. 1 × 1.5 mm, 5-loculare, pallide ferrugineo-strigosum, in stylum abrupte angustatum, ovula in loculi medio affixa, pendula, stylus conoideus, c. 1 mm longus, in fructu basi paulum incrassatus, sulcatus, stigmatibus 5 albis. Fructus pomiformis, 5—10 diam., in vivo viridis, apice rotundatus, 1—3-spermus, pallide ferrugineo-floccosus, glabrescens, pericarpio spongioso, lignoso, c. 3 mm crasso, semina navicularia, 5—7 × 2.5—3.5 × 2—2.5 cm, basi et apice obtusa, flavescentia et simul maculis numerosis fuscis variegata, nitida, hilo albido seminis totam superficiam ± $^{1}/_{3}$ attingenti, 4.5—6.5 × 2—2.5 cm, endospermium membranaceum, cotyledons crassi et carnosi, radicula acuta, exserta.

Typus: *van Royen 3506* in L.

4. **Pouteria paucinervia** Erlee, nov. sp. — *Cf. pag. 490 et f. 9.*

Arbor. Ramuli teretes, griseo-brunnei, innovationibus foliisque novellis fuscis exceptis glabri. Folia chartacea, obovata ad spathulata, 4—8 × 1—3 cm, apice rotundata vel obtusa, basi decurrentia, supra glabra, subtus primum fusco-tomentosa, denique glabrescentia; nervi secundarii 4—6, angulo 30°—40° de costa subtus prominenti adscendentia, prope marginem reticulatis interdum arcuatim conjuncti; nervi tertiarii transversi inter sese paralleli; petioli 3—5 mm longi, fusco-tomentosi, glabrescentes. Inflorescentiae floresque ignoti. Fructus depresso-globoso, 1.5—2 × 1.5—2 × 1.2—1.5 cm (sicci), fusco-tomentosi, glabrescentes, sepalis 5 persistentibus, pedicelli c. 5 mm longi, 2 mm crassi; semina 4—(5 ?), ovoidea, dorso carinata, c. 13 × 11 × 8 mm, testa nucamentacea, cicatrice late ovata, c. 10 × 7 mm, cotyledonibus crassis, albumine nullo, radicula exserta.

Typus: *Buwalda 6503* in L.

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- rubicunda (Pierre) Dubard ... E 54
- saligna Moore ... E 55
- sarcospermoides H. J. Lam ... E 56
- schlechteri (Krause) H. J. Lam ... E 57
- sebertii (Pancher) Dubard ... E 58
- *sericea* (Ait.) Dubard ... 1
- serpentina Moore ... E 59
- *sessiliflora* White ... 24
- singuliflora (White & Francis) van Royen ... E 60
- sphaerocarpa (Baillon) Dubard ... E 61
- suboppositifolia H. J. Lam ... E 62
- sussu (Engler) H. J. Lam ... E 63
- tenuipes (Krause) H. J. Lam ... E 64
- torricellensis (Schum.) H. J. Lam ... E 65

velutina (Elmer) H. J. Lam .... E 66
  var. sarcocarpa (Merrill) H. J. Lam .... E 66
  var. velutina .... E 66
vieillardii (Baillon) Dubard .... E 67
vrieseana (Pierre) Dubard .... E 69
wakere (Pancher & Sebert) Pierre 14
Pouteria ? acuminata (Baillon) Baehni 12
? **amieuanum** (Guill.) van Royen .... D 1
annamensis (Pierre) Baehni 15
anteridifera (White & Francis) Baehni .... E 1
arnhemica (F. v. M.) Baehni .... E 2
australis (R. Brown) Baehni .... E 3
baillonii (Zahlbr.) Baehni .... E 4
balansana (Pierre) Baehni 5
baueri (Montr.) Baehni .... E 5
brachyloba (Domin) Baehni .... E 6
brousmichei (Baillon) Baehni .... E 7
brownlessiana (F. v. M.) Baehni .... E 8
calomeris (Baillon) Baehni 6
castanosperma (White) Baehni 26
? **celebica** Erlee 18
cinerea (Pancher) Baehni .... E 9
clemensii (Lec.) Baehni .... E 10
clementis (H. J. Lam) H. J. Lam .... E 11
? *contermina* (Pierre) Baehni .... E 12
cotinifolia (A. DC) Baehni .... E 13
densinervia (Krause) Baehni .... E 14
discolor (Baillon) Baehni .... E 15
doonsaf van Royen 21
duclitan (Blanco) Baehni .... E 16
? *dugulla* (Bailey) Baehni .... E 17
? *eerwah* (Bailey) Baehni .... E 18
eluviicola Baehni .... E 19
endlicheri (Montr.) Baehni 25
? erringtonii (Dubard) Baehni .... D 4
euphlebia (F. v. M.) Baehni .... E 20
  var. *cryptophlebia* White .... E 20
  var. *typica* Baehni .... E 20
firma (Miq.) Baehni .... E 21
  var. *microcarpa* (H. J. Lam) Baehni .... E 21
  var. *typica* (H. J. Lam) Baehni .... E 21
? *forbesii* (H. J. Lam) Baehni .... E 22
francii Baehni .... E 23
garberi (Christ.) Baehni .... E 24
? garcinioides (Krause) Baehni 27
? grandifolia (Wallich) Baehni 17
hainanensis (Merrill) Baehni 15
hochreutineri (H. J. Lam) H. J. Lam .... E 25
howeana (F. v. M.) Baehni .... E 26
? *intermedia* (Baillon) Baehni .... E 27
? *kaernbachiana* (Engler) Baehni .... E 28
kaniensis (Krause) Baehni .... E 29
? *kerrii* (Fletcher) Baehni 17
? *keyensis* (H. J. Lam) Baehni .... E 30
koghiensis Baehni .... E 31
krausei (H. J. Lam) Baehni .... E 32
laetevirens (Baillon) Baehni .... E 33
lamii Baehni .... E 34
? *lamprophylla* (Krause) Baehni .... E 35
lasiantha (Baillon) Baehni .... E 36
lauterbachiana (H. J. Lam) Baehni 10

? lecardii (Baillon) Baehni .... D 8
lecomtei (Guill.) Baehni 4
ledermannii (Krause) Baehni .... E 37
lifuana (Baillon) Baehni .... E 38
? longipes (Baillon) Baehni 11
? lucida (Burck) Baehni 28
luzoniensis (Merrill) Baehni 2
  var. luzoniensis 2
  var. **papuana** Erlee 2
maclayana (F. v. M.) Baehni 13
macrantha (Merrill) Baehni 20
? *macropoda* (H. J. Lam) Baehni .... E 39
maingayi (Clarke) Baehni .... E 40
malaccensis (Clarke) Baehni 3
mindanaensis (H. J. Lam) Baehni .... E 41
moluccana (Burck) Baehni .... E 42
monticola (Krause) H. J. Lam .... E 43
myrsinoides (Cunn.) Baehni .... E 44
? *nebulicola* (H. J. Lam) Baehni .... E 45
novo-caledonica (Engler) Baehni 4
  var. **lecomtei** (Guill.) Erlee 4
  var. novo-caledonica 4
occidentalis (H. J. Lam) Baehni 7
obovata (R. Br.) Baehni .... E 46
? *obovoidea* (H. J. Lam) Baehni .... E 47
? obpyriformis (Bailey) Baehni .... D 2
oxyedra (Miq.) Baehni .... E 48
pancheri (Baillon) Baehni 16
paucinervia Erlee 23
pedunculata (Hemsl.) Baehni .... E 49
? petaloides (H. J. Lam) Baehni .... D 3
pinifolia (Baillon) Baehni .... E 50
pohlmaniana (F. v. M.) Baehni .... E 51
richardii (F. v. M.) Baehni .... E 52
rigidifolia (Krause) Baehni .... E 53
rubicunda (Baillon) Baehni .... E 54
saligna (Moore) Baehni .... E 55
sarcospermoides (H. J. Lam) H. J. Lam .... E 56
schlechteri (Krause) Baehni .... E 57
sebertii (Pancher) Baehni .... E 58
sericea (Ait.) Baehni 1
serpentina (Moore) Baehni .... E 59
? *singuliflora* (White & Francis) Baehni .... E 60
solomonensis van Royen 24
sphaerocarpa (Baillon) Baehni .... E 61
suboppositifolia (H. J. Lam) Baehni .... E 62
sussu (Engler) Baehni .... E 63
sylvatica Baehni 22
tenuipes (Krause) Baehni .... E 64
torricellensis (Schum.) Baehni .... E 65
unmackiana (Bailey) Erlee 8
velutina (Elmer) Baehni .... E 66
  var. *sarcocarpa* (Merr.) H. J. Lam .... E 66
  var. *typica* H. J. Lam .... E 66
? *vieillardii* (Baillon) Baehni .... E 67
villamilii (Merrill) Baehni 19
viscosa Baehni .... E 68
vrieseana (Pierre) Baehni .... E 69
wakere (Pancher & Sebert) Baehni 14
xylocarpa White 9
Pycnandra ? **coriacea** (Baillon) Vink 500

Rhamnoluma novo-caledonica (Eng.) Baillon 4
Sapota endlicheri Montr. 25
Sebertia acuminata Pierre 12
  calomeris (Baillon) Däniker 6
Sersalisia ? acuminata Baillon 12
  sericea (Ait.) R. Br. 1
Sideroxylon annamensis (Pierre) Lecomte 15
  garcinioides Krause 27
  grandifolium Wallich 17
  hainanense Merrill 15
  ? lucidum Burck 28
  luzoniense Merrill 2
  macranthum Merrill 20
  malaccense Clarke 3
  novo-caledonicum (Engl.) Engl. 4
  pancheri Baillon 16
    var. *glabrescens* Baillon 16
    var. *vestitum* Baillon 16
  petitianum Pierre 25
  pomiferum (Zippel) Engler 13
  regium Wallich 17
  sericeum Aiton 1
  stenophyllum Merrill 20
  villamili Merrill 19
  wakere (Pancher & Sebert) Baillon 14
  ? zippelianum Pierre 13
Xantolis boniana (Dubard) van Royen
    var. rostrata (Merrill) van Royen .... E 19

REVISION OF THE SAPOTACEAE OF THE MALAYSIAN AREA IN A WIDER SENSE

IVb. Ganua Pierre ex Dubard
(2nd Supplement)

by

H. J. LAM

(Rijksherbarium, Leiden)

(Issued 15. VI. 1957).

The present paper comprises supplementary notes on Ganua, based on material which has come to our knowledge after the last contribution on the genus had been published.

In the following text the previous papers have been referred to as follows:

Van den Assem 1953 = Rev. Sap. IV. Ganua in Blumea 7 (2), 1953, 364—400.

Van den Assem & Kostermans 1954 = Rev. Sap. IVa. Ganua (Add. Notes) in Blumea 7 (3), 1954, 481—483.

There are some interesting new localities (*G. beccarii, daemonica, monticola, motleyana*) and in two cases (*G. boerlageana, prolixa*) the fruits which were unknown are described.

G. beccarii Pierre ex Dubard — Van den Assem 1953, 380.

BORNEO. North Borneo, Sipitang, Ulu Sipitang, 5 miles E of Sipitang, 150 m alt.: *Wood & Kapis b. Sisiran F. D. San. 16926* (A, BO, BRI, K, KEP, L, SAN, SING), tree 16.5 m, y. fr. in July 1955.

First record outside Sarawak.

G. boerlageana (Burck) Pierre ex Dubard — Van den Assem 1953, 385.

In previous publications it was stated that the fruit of *G. boerlageana* is unknown. However, a fruit was found in the liquor collection of the "Rijksherbarium", probably belonging to the type specimen (cult. Hort. Bot. Bog.). The fruit is 3.5 × 1.35 cm, broadest at base, tapering towards apex, two-seeded, seeds almost as long as fruit, with long and narrow scar, albumen none or very thin.

G. coriacea Pierre ex Dubard — Van den Assem 1953, 389.

BORNEO. Sarawak, Sibu, in swamps: *Anderson, F. D. Sar. 1563*, ster. 1954; Loba Kabang South P. F., in mixed swamp forest: *Anderson, Sar. F. D. S. 0545* (FHO, L, SAR), small tree without buttresses, bark smooth, reddish brown, latex little, wood hard and heavy, flow. in March 1954, nat. n.: ketiau merah; same loc.: id. *S. 2714*

(FHO, L, SAR), ster., nat. n.: nyatoh; id. *S. 2692* (FHO, SAR). An accompanying sheet adds as belonging here: *S. 0526, 0857, 0867, 0875*; these nrs were not available to us; girth rarely more than 4 ft, bole cylindrical, no buttresses, bark reddish brown as is midrib when dry, sapwood light brown, heartwood dark brown, moderately hard and heavy, numerous small lenticellate knee roots at base; common in mixed swamp forest in Rejang Delta, frequent in alan type forest, absent from padang alan; *id. S. 0893?* (FHO, SAR) in alan type for., ster.; id. *S. 0512?* (FHO, SAR). Both last-named numbers sterile, leaves unusually large, up to 12 × 6 cm.

Remark. The native name ketiau merah (merah = red) refers to the reddish colour of the bark in contradistinction to *G. pierrei* (k. puteh; puteh = white).

G. curtisii (K. & G.) H. J. Lam — Van den Assem 1953, 388.

Borneo. Brunei, Badas line 5½ miles: *Anderson, Sar. F. D. S. 2815* (FHO, L, SAR), small tree, no buttresses, bark smooth.

Remark. The field lable mentions the name *G. ridleyii* (sic) without author's name. This being unknown in literature, it is probably a nomen nudum.

G. daemonica Van den Assem, 1953, 394.

Borneo. North Borneo, Sipitang, Ulu Moyah, 8 miles SSE of Malaman, 730 m alt.: *Wood, For. Dept. San. 16675* (A, BO, BRI, K, KEP, L, SAN, SING), tree 33 m, flow. in Sept. 1955.

First record outside Sarawak.

G. kingiana (Brace) Van den Assem.

Var. **kingiana** — Van den Assem 1953, 373; Van den Assem & Kostermans 1954, 481.

Malaya. Singapore, Bukit Timah For. Res.: *J. Sinclair, Sing. F. Nr. 40035* (L, SING), ster., latex white, abundant; leaves juvenile, bark smooth, no buttresses; identification not fully certain.

Var. **euphlebia** Van den Assem 1953. 374; Van den Assem & Kostermans 1954, 481.

Borneo. North Borneo, Sandakan, Cpt. 14, Sepilok For. Res., 15 miles W of Sandakan, 10 m alt.: *Wood & Charington, For. Dept. San. 15395* (A, BO, BRI, K, KEP, L, SAN, SING); tree 30 m, flow. in April. Ovary 12-celled, cells short and complete.

G. monticola (Merr.) H. J. Lam — Van den Assem 1953, 379.

Borneo. Sarawak, Loba Kabang South P. F., in mixed swamp forest: *Anderson, Sar. F. D. S. 0526?* (FHO, L, SAR), small tree, probably immature. This specimen, if correctly identified, confirms that the area of this species actually includes Borneo.

G. motleyana (de Vr.) Pierre ex Dubard.

Var. **motleyana** — Van den Assem 1953, 382; Van den Assem & Kostermans 1954, 482.

Malaya. Johore, Sungei Tiram: *J. Sinclair, Sing. F. nr. 40328* (L, SING), tree, 25 ft, bark brownish grey, slightly pustular, latex white, copious, lvs glossy green above, paler beneath, petals greenish white, reflexed, ciliate at margins, anthers pale yellow, filaments greenish white, flow. in July 1954; Mawai: *E. J. H. Corner, Sing. Field nr 28442*, fr. in May 1954.

Bangka. Djebus: *(Teysmann) 3341 H.B.* (U), nat. n.: ketiau.

Borneo. S.E. Borneo, Sg. Wain region, N of Balikpapan, 10 m alt., sandy loam soil: *Kostermans 4457* (BO, L), tree 20 m, 14 m clear bole, diam. 0.35 m, bark smooth, flow. dirty yellow, Sept. 1950, nat. n.: njato — Sarawak, Muhong, freshwater swamp for.: *Bartle, Sar. F. D. S. 0671* (FHO, SAR), large tree, bark with shallow fissuring, latex white, seeds collected by natives for fat, fr. in Jan. 1954, nat. n.: ketioh; same hab., Loba Kabang South P. F. in padang alan: *Anderson, Sar. F. D. S. 2722* (FHO, L, SAR), small tree, no buttresses, bark smooth, lenticels numerous, latex white, copious, ster., nat. n.: nyatoh padang; also *Sar. F. D. S. 2618* (FHO, L, SAR), and *S. 2768* (FHO, SAR), ster.; Sedilu F. R., Sadong: *Carroll, F. D. Sar. 584* (SAR), old flow. July 1927, nat. n.: ketio.

BURMA. Tenasserim: Reporter on Econ. Prod. Govt. of India 24866 (K), a specimen sub nomine *Payena oleifera* Prain & Watt, MS, nat. name: kanswe; old flow. and fr. Undoubtedly this species though the sepals (in old flowers) are not tufted. Probably wild.

The records from Bangka and Tenasserim are new.

Var. **scortechinii** K. & G. — Van den Assem 1953, 384.

BORNEO. British North Borneo, Banting (Mengalong F. R.), swampy forest, B.N.B. For. Department: Melegrito 3207? (K, L), tree, 30′ high, girth 39″, flow. pale green, young buds on 17. VI. 1933.

Young flower buds only; the vegetative characters correspond with those of the type of the variety; if the identification is correct, first record of the variety outside the Malay Peninsula.

G. palembanica (Miq.) Van den Assem & Kostermans 1954, 482.

BORNEO. East Borneo, Balikpapan, Sg. Mentawio, on low sandy ridges: *Kostermans 9781* (BO, L), scattered treelet, 4 m, white latex.

Perfectly matching the type specimens from Sumatra; cf. note under *G. pierrei.*

G. pallida (Burck) H. J. Lam — Van den Assem 1953, 377; Van den Assem & Kostermans 1954, 481.

BORNEO. Sarawak, S. Semengoh F. R., in the hills: *Carroll, F. D. Sar. 226* (= *F. 22*) (SAR), brownish bark, sticky white sap, light planks; old flow. Febr. 1915, nat. n.: nyatoh putat — S.E. Borneo, Balikpapan, S. Nain, old for., 30 m alt.: *Achmat F.R.I. bb. 34.416* (BO, L), y. tree, 21 m, diam. 0.22 m, ster.

Remark. The Sarawak specimen is that mentioned by Lam (Bull. Jard. Bot. Buit., Sér. III, 8 (4), 1927, 427), which Van den Assem 1953 states to be untraceable.

G. pierrei Van den Assem 1953, 392.

BORNEO. Sarawak, Loba Kabang South P.F., common in mixed swamp forest in Rejang Delta, frequent in alan type forest, absent from padang alan: *Anderson, Sar. F. D. S 0469* (FHO ,L. SAR), medium-sized tree, bole cylindrical, girth 27″, no buttressing, bark smooth, pale brown, with numerous lenticels in rows, latex little, flow., nat. n.: ketiau; same loc. and annot.: idem *S. 0521* (FHO, SAR), ster.; idem *S. 0534* (FHO, SAR), ster.; idem *S. 2690* (FHO, SAR), ster., nat. n.: ketiau puteh; *idem S. 2683* (FHO, SAR), ster., nat. n.: ketiau puteh; Naman F. R., in mixed swamp forest: *Anderson, Sar. F. D. S. 0684* (FHO, L, SAR), small tree, girth 48″, no buttresses, bark light grey, white sticky latex, wood very light brown, moderately hard, with dark brown heartwood, with very prominent stipules, ster.

Remarks. The native name ketiau puteh (puteh = white) refers to the light grey or light brown colour of the bark, in contradistinction to *G. coriacea* (k. merah).

As is stated on the label of *S. 0684,* the stipules are very striking, though they seem to fall off at an early stage. This is probably why the original description (Blumea 7 (2), 1953, 394) says: without stipular organs. The stipules are ribbon-shaped and up to 1.5 cm long and 0.15 cm wide, closely resembling those of *G. palembanica* (Miq.) Van den Assem & Kostermans (Blumea 7 (3), 1954, 482). This seems to corroborate our opinion that the last-named species — originally described as a *Podocarpus*! — is actually a Ganua, and I would not be surprised if *G. pierrei* and *G. palembanica* would in the end prove to be conspecific.

G. prolixa Pierre ex Dubard — Van den Assem 1953, 375.

BORNEO. Sarawak, Nanga Pelagos: *Daud & Tachun 931, Sing. F.N. 35667* (L, SING), tree 9 m, fr. yellow in July 1938; nat. n.: nyatoh; Btg Rejang, Giam Bidai: *Mashor 376, F.D. Sar. F.A. 0648* (SING), ster.

First specimens seen to possess fruits, which are globular, velvety villous, chocolate coloured when dry, 1.7—2 cm in diam., sepals and pedicels hirsutely villous, sepals acute, 0.6—0.7 cm long and almost as wide.

G. sarawakensis Pierre ex Dubard — Van den Assem 1953, 375.

BORNEO. North Borneo, Sandakan, Cpt. 7, Sepilok For. Res., 15 miles W of Sandakan, 10 m alt.: Wood, *Sand. For. Dept. 16238* (A, BO, BRI, K, KEP, L, SAN, SING), tree 25 m, flow. April 1955, sec. nerves up to 23.

MISCELLANEOUS BOTANICAL NOTES VIII [1]

by

C. G. G. J. VAN STEENIS

(Flora Malesiana Foundation, Leyden)

(Issued 15. VI. 1957).

58. **Thesium in Malaysia** (Santalaceae)

The only record of *Thesium* in Malaysia was hitherto the Southern Chinese *Thesium psilotoides* Hance from medium altitudes of the Benguet and Bontoc Mountain Provinces in North Luzon, according to Merrill (Enum. Philip. Fl. Pl. 2, 1923, 115), occurring between 1200 and 1500 m. The same species has also been found in the Lesser Sunda Islands, Sumba Island, by C. N. A. de Voogd (E. Sumba, 300 m, limestone quarry, *De Voogd 1873* (BO, L), Dec. 1, 1934, plant pale green, fruit yellow, flower white).

The Sumba specimens exactly match the Philippine specimens. Species like this one, with a very short calyx tube, look astonishingly like *Halorrhagis*, in habit, but possess 5-merous flowers, lack bulbous-based hairs, and show a peculiarly cartilaginous leaf apex.

59. **The identity of Amorphophallus selebicus Nakai** (Araceae)

The late Prof. Nakai described a new giant species of *Amorphophallus* from Celebes, cultivated in the Botanic Gardens, Bogor (Bull. Tokyo Sc. Mus. no 22, 1948, p. 1, photo 1). I have carefully examined the specimen, which is preserved in Herbarium Bogoriense and found it exactly matching the Sumatran *Amorphophallus titanum* Becc. of which it represents a smallish inflorescence. There seems to be no doubt, in my mind, that the origin is Sumatra, and not Celebes, an error which can easily occur in Botanic Gardens where many specimens of *Amorphophallus* have been imported and grow side by side. The leaf photographed can of course not belong to the flowering plant.

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1) The first paper in this series appeared in Bull. Bot. Gard. Btzg III, 17, 1948, 383—411; the 2nd in Blumea 6, 1948, 243—246; the 3rd in Bull. Bot. Gard. Btzg III, 18, 1950, 457—461; the 4th in Reinwardtia 1, 1952, 467—481; the 5th in Acta Bot. Neerl. 2, 1953, 298—307; the 6th in Blumea 7, 1954, 595—598; the 7th in Blumea 8, 1955, 170—174.

60. The identity of Pycnosandra Bl. (Euphorbiaceae) [1]

The genus *Pycnosandra* Bl. (Febr. 1856) was referred to *Dodekastemon* Hassk. (Nov. 1856) by Miquel (Fl. Ind. Bat. 1, 2, 1859, 360) who considered its two species as varieties of one. These two species are *P. serrata* (Bl.) Bl. and *P. timorensis* Bl.

The first, *P. serrata* (Bl.) Bl., has appeared to be a true *Cyclostemon* = *Drypetes*, according to Mueller-Arg. (in DC., Prod. 15^2, 1866, 485), to J. J. Smith (in K. & V., Bijdr. Booms. 12, 1910, 218), and to Pax & Hoffmann (Pfl.Reich Heft 81, 1922, 273), who exclude it from *Pycnosandra*.

Drypetes serrata (Bl.) P. & H. (l. c. 1922, 273) has been given priority over the American *D. serrata* (Maycock) Krug & Urban 1892 and the latter was renamed by Pax & Hoffmann *D. serrulata* P. & H., l. c. 267, 273. This appears not admissable nomenclatorally. The epithet of the Malaysian species is older but its use under *Drypetes* is prevented.

The Malaysian species should be called **Drypetes teysmanni** (Hassk.) Bakh. f. & Steen. comb. nov. (*Dodekastemon teysmanni* Hassk., Versl. Med. Kon. Ak. Wet. 4, 1856, 141; Bot. Zeit. 1856, 803; Hort. Bog. ed. nov. 1858, 63; Miq., Fl. Ind. Bat. 1, 2, 1859, 360, excl. var. *β timorensis*).

The second species, *P. timorensis* Bl. is consequently typifying the genus *Pycnosandra* (*Drypetes* sect. *Pycnosandra* P. & H. l. c. 278 = *Cyclostemon* sect. *Dodekastemon* (Hassk.) M. A.). It was described on ♀ specimens only. The original sheets of it at the Rijksherbarium appear conspecific with *Putranjiva roxburghii* Wall. The synonymy runs as follows:

Putranjiva roxburghii Wall., Tent. Fl. Napal. 2, 1826, 61. — *Pycnosandra timorensis* Bl., Mus. Bot. 2, 1856, 192. — *Dodekastemon teysmanni* Hassk. var. *β timorensis* Miq., Fl. Ind. Bat. 1, 2, 1859, 360. — ? *Cyclostemon racemosum* Zipp. ex Span., Linnaea 15, 1841, 348, nomen.

Whether the genus *Putranjiva* is distinct from *Drypetes* is liable to doubt. Pax & Hoffmann place them in different subtribes and key them out by the presence (*Drypetes*) or absence (*Putranjiva*) of a disk. There is, however, such an extraordinarily striking similarity in further characters of habit and structure that a close study is strongly advised to a future monographer.

61. Note on two Malaysian Verbenaceae

Premna cowanii Hatusima ex Moldenke [2]), Phytologia 5, May 1954, 12, fig. p. 11. — *Wendlandia papuana* Laut. & Schum. Fl. Deut. Schutzgeb. Südsee, Nachtr. 1905, 390. — *Premna* sp. Cowan, Not. R. Bot. Gard. Edinb. 16, 1932, 306. — *P. brongersmai* H. J. Lam, Blumea 7, Dec. 1954, 553, fig. 1—2, syn. nov. — *Premna vagans* Bakh. ex Moldenke, nomen tantum.

This New Guinea species was originally described as a Rubiaceous plant. In the same year it has independently received two epithets under *Premna*.

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[1]) In collaboration with Dr R. C. Bakhuizen van den Brink Jr.

[2]) In collaboration with H. J. Lam.

As the epithet *papuana* was preoccupied in *Premna,* Dr Hatusima, who during the last world war worked at Bogor towards a critical enumeration of Papuan plants, gave a new name to the species, naming it after Mr Cowan in honour of his removing it from the *Rubiaceae* and putting it in the right genus. Its type remains that of *Wendlandia papuana* viz. *Schlechter 14395.*

Vitex trifolia L. ssp. **litoralis** nov. subsp.

One of the typical plants confined to accrescent sandy beaches in Malaysia is a prostrate shrub of which the radiating, rooting branches (often covered by sand) produce small, erect lateral flowering shoots. An excellent photograph of this remarkable habit, otherwise only found in herbaceous beach plants (*Ipomoea pescaprae, Vigna, Canavalia*) has been produced by Dunselman (Trop. Natuur 28, 1939, 78, f. 9), a drawing by Backer (op. cit. 8, 1919, 7, f. 13).

It has been described as *V. ovata* Thunb. (1784) and by Blanco (Fl. Filip. 1837, 513) as *V. repens* Blco. Later it has been considered a var. *β simplicifolia* of *V. trifolia* by von Chamisso (Linnaea 7, 1832, 107). Schauer in his revision (in DC., Prod. 11, 1847, 683) regarded it also as a var. *β unifoliolata* of *V. trifolia.* Makino (Bot. Mag. Tokyo 17, 1903, 92) named it *V. trifolia* var. *ovata* (Thunb.) Makino, Ridley (Disp. 1930, 309) called it *V. trifolia* var. *repens* Ridl., Bentham (Fl. Austr. 5, 1876, 67) *V. trifolia* var. *obovata* Bth.

This evaluation as a variety has been maintained by later monographers (Lam & Bakhuizen van den Brink, Merrill, and Moldenke).

Backer (Trop. Natuur 8, 1919, 7), Corner (Gard. Bull. Str. Settl. 10, 1939, 256—260), and following him Backer & Meeuse (Bekn. Fl. Java, em. ed., 9, 1949, fam. 200, p. 24) have again treated it as a good, distinct species. And Corner has taken great pains to give arguments for this view. Contrary to Ridley (Disp. Pl. 1930, 309) who suggested to have seen it change into normal *V. trifolia* after transplantation to Singapore, Corner maintains that it retains its habit and characters in cultivation and is no mere phenotype. He transplanted ten specimens to the Botanic Gardens, Singapore, where he also had living shrubs of *V. trifolia* and *V. negundo,* and has found that they retain their habit. As to the constancy of that character there remains hence little doubt, though additional experiments in raising inland plants from seed of the prostrate form and crossing it with *V. trifolia* are still a desideratum.

In addition Corner assumes to have found differences with *V. trifolia* in the corolla, fruiting calyx, and the fruit. I have tried to verify these differences with many sheets preserved at Leyden but I cannot corroborate these statements. The fruits of *V. trifolia* and *V. ovata* offer no differences in size, shape, and internal tissue structure. That the inflorescences of *V. ovata* are smaller than the average size in *V. trifolia* I deem not significant, as they are borne on small side-branches. The only characteristics holding are vegetative in nature, viz the typical prostrate, rooting, runner-like branches, and the obovate, small, simple leaves, and geographic: its exclusive growth on the sandy beach.

The conclusion in my opinion is therefore that it is a clear-cut ecological (littoral) race, exclusive of the *V. trifolia* population. It should therefore be assigned subspecific rank which is accordingly proposed here. I have chosen a new name in the subspecific rank as the epithet *ovata* is misleading and the varietal epithets do not refer to its peculiar habitat. The technical description runs: rami prostrati, radicantes. Folia simplicia, obovata, rotundata. Type: *Bloembergen 3894* (L).

The distribution of this subspecies is very wide in the Malaysian and Pacific area; at Leyden specimens are presented from: Japan: Nagasaki, Yokohama. China: Hongkong. Malaysia: Malay Peninsula: Kuala Kemamam, K. Pahang, K. Trengganu, Pahang Tua, Corner l. c.; Banka; W. Borneo: Dunselman l. c.; S. Java: Patjitan; Madura Isl.: Sergang; Salayer Isl.; Sula Isl.: Mangoli; Lesser Sunda Isl.: Savu, Kisar, Timor; S. New Guinea: Merauke; Philippines: Luzon (Camarines Norte pr. Daet, Zambales pr. Subig, Batangas pr. Bauang), Mindoro, Panay (Antique), Sibuyan (Capiz pr. Magellanes); Pacific: Bonin Isl., Austral Isl. (Rurutu, pr. Murai), Hawaii (Oahu).

CYANOPHYCEAE FROM FISH-PONDS IN WEST-JAVA

by

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During the year 1948, Mr. W. H. Schuster, Laboratory of Inland Fisheries, Buitenzorg (Bogor), sent samples for determination from coastal saltwater-ponds kept for raising *Chanos chanos* (bandeng). *Cyanophyceae* have proved to form an important ingredient of the diet of the bandeng-fry.

The cooperation in studying the thick layer of *Cyanophyceae* on the bottom of the ponds stopped at the end of the year, since difficulties of transport arose. The names of the identified species were published previously (Schuster 1949). The present author wishes to draw attention to the *Cyanophyceae* communities of two ponds with different vegetation. The data concerning these ponds were received from Mr. Schuster.

I. Batavia (Djakarta), Benedenstad (= lower town), Luar Batang; bottom with soft mud showing strong chemical reduction; depth 30 cm; water supply through a canal from the harbour, mixed with fresh water much polluted by sewage from the town, salinity 18—22 $^0/_{00}$, temperature 26—33° C.

Oscillatoria brevis Kütz. ex Gom., Monogr. Oscill. 2 in Ann. Sci. Nat. Bot. 7, 16, 1893, 229, Pl. 7 fig. 14, 15.

Trichomes 6—8 μ diam.; cells $^1/_3$—$^1/_2$ length × diam., tips curved, obtuse (fig. 1).

Cosmopolitan; in fresh water as well as in salt-water, and on moist soil (Geitler, 1942, 216).

Oscillatoria cortiana Menegh. ex Gom., Monogr. Oscill. 2 in Ann. Sci. Nat. Bot. 7, 16, 1892, 231, Pl. 7 fig. 17.

Trichomes 6—7 μ diam., blue-green, cells nearly square (fig. 2, 3). Compared with specimen from Meneghini in herb. Kützing.

In thermal springs as well as in cold water in Europe, North America, Africa, Antarctis (Geitler, 1942, 217).

Oscillatoria laetevirens Crouan ex Gom., Monogr. Oscill. 2 in Ann. Sci. Nat. Bot. 7, 16, 1892, 226, Pl. 7 fig. 11.

Trichomes 3—4 μ diam., yellow-green, slightly torulose; cells nearly as long as or slightly longer than broad (fig. 4, 5).

Sea-shores of Europe, North America and Polynesia (Geitler, 1930—1932, 949).

Oscillatoria margaritifera Kütz. ex Gom., Monogr. Oscill. 2 in Ann. Sci. Nat. Bot. 7, 16, 1892, 216, Pl. 6 fig. 19.

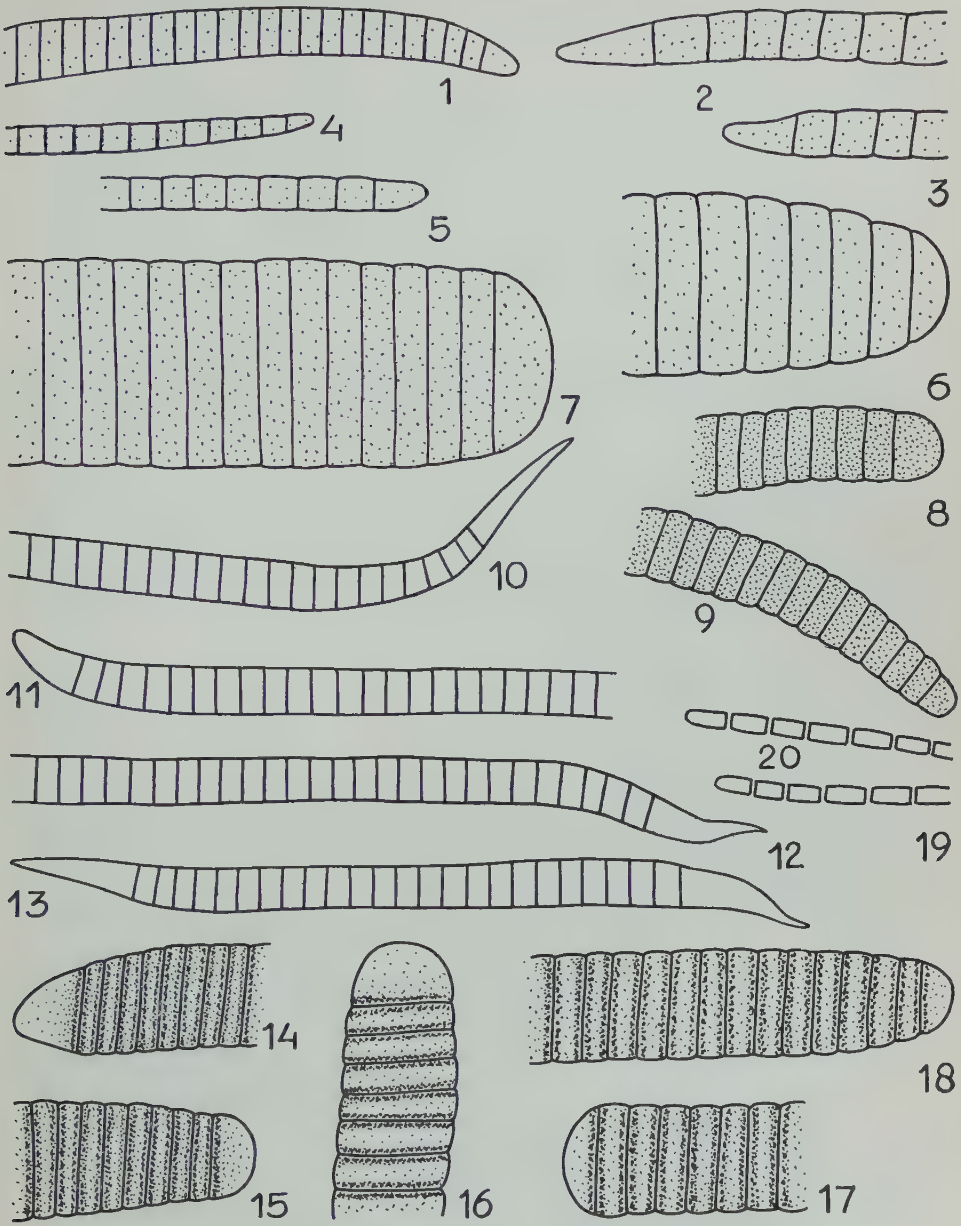

Fig. 1. *Oscillatoria brevis* Kütz. ex Gom. — 2, 3. *O. cortiana* Menegh. ex Gom. — 4, 5. *O. laetevirens* Crouan ex Gom. — 6, 7. *O. margaritifera* Kütz. ex Gom. — 8, 9. *O. nigro-viridis* Thwaites ex Gom. — 10–13. *O. rostrata* Borge — 14–18. *O. sancta* Kütz. ex Gom. — 19, 20. *Phormidium molle* (Kütz.) ex Gom. — 1000 ×
Drawn from the material from the fishponds concerned.

Few. Trichomes 18—27 μ diam., torulose; cells $^1/_6$ length × diam.; tips usually slightly attenuate, rounded (fig. 6, 7). Compared with type in herb. Kützing.

Cosmopolitan; in salt-water (Geitler, 1942, 216).

The same species was found growing, also in a small number, in a sample of a similar pond in the same place with a depth of 40 cm and water with a salinity of 35 $^0/_{00}$. The sample contained further some diatoms and a great number of shells of foraminifers.

Oscillatoria nigro-viridis Thwaites ex Gom., Monogr. Oscill. 2 in Ann. Sci. Nat. Bot. 7, 16, 1892, 217, Pl. 6 fig. 20.

Trichomes 9—10 μ diam., dark olivaceous, torulose; cells $^1/_3$ length × diam., tips obtuse (fig. 8, 9).

Cosmopolitan; sea-shores, on stones and mud (Geitler, 1942, 216).

Oscillatoria rostrata Borge in Arkiv f. Bot. 25 A, 17, 1933, 6, T. 2 fig. 23.

Not numerous. Trichomes 6—7 μ diam., aerugineous, often short; cells $^1/_3$—$^1/_2$ length × diam.; tips acuminate, very acute (fig. 10—13).

N.W. China, pools containing soda in the water (Borge).

Oscillatoria sancta Kütz. ex Gom., Monogr. Oscill. 2 in Ann. Sci. Nat. Bot. 7, 16, 1892, 209, Pl. 6 fig. 12.

Abundant. Trichomes 12—18 (usually 15) μ diam., blue-green, slightly torulose, usually slightly attenuate to the top; cells $^1/_6$—$^1/_3$ length × diam., granulate along the transversal walls; tips rounded or very obtuse (fig. 14—18). Compared with type in herb. Kützing.

Probably comopolitan; in standing as well as in running water, also in thermal springs (Geitler, 1942, 216).

Phormidium molle (Kütz.) ex Gom., Monogr. Oscill. 2 in Ann. Sci. Nat. Bot. 7, 16, 1892, 163, Pl. 4 fig. 12.

Trichomes 2.5 μ diam., blue-green, slightly torulose; cells longer than diam.; tips obtuse (fig. 19, 20). Compared with type in herb. Kützing.

Probably cosmopolitan; in standing, also salt-water and on moist soil.

Spirulina maior Kütz. ex Gom., Monogr. Oscill. 2 in Ann. Sci. Nat. Bot. 7, 16, 1892, 251, Pl. 7 fig. 29.

Cosmopolitan; in standing, also salt- and thermal water (Geitler, 1942, 219).

II. Antjol, between Batavia (Djakarta) and Tandjong Priok; sandy bottom, depth of these coastal fish-ponds 30—70 cm; temperature of the water 24—38.5° C, sea-water (salinity 28—35 $^0/_{00}$).

Agmenellum quadruplicatum (Menegh.) Bréb. (= *Merismopedia punctata* Meyen); Drouet and Daily, Rev. cocc. Myxoph., 1956, 86, fig. 133.

Abundant. Strata large, circa 500 μ diam., having the same length, edges irregular; cells 2.5—3 μ broad and 3.5 μ long.

Probably cosmopolitan; in shallow fresh and brackish water and on mud and wet sand (Drouet and Daily).

Anacystis dimidiata (Kütz.) Drouet et Daily, Rev. cocc. Myxoph., 1956, 70, fig. 100—107 (= *Chroococcus turgidus* (Kütz.) Naeg. var. *maximus* Nygaard).

Few. Cells 45 μ diam., olivaceous; sheath 5 μ thick.

Probably cosmopolitan; in shallow fresh, brackish, and sea-water (Drouet et Daily).

Gomphosphaeria aponina Kütz. (= *Gomphosphaeria aponina* Kütz. var. *multiplex* Nygaard); Drouet et Daily, Rev. cocc. Myxophyc., 1956, 98, fig. 178—180.

Stratum 66 μ in diam., without sheath; cells having sheaths, 9 μ long and 4 μ diam. without sheath.

Probably cosmopolitan; in shallow fresh, brackish, and sea-water (Drouet et Daily).

Microcoleus chthonoplastes (Fl. Dan.) Thuret ex Gom., Monogr. Oscill. 1 in Ann. Sci. Nat. Bot. 7, 16, 1892, 352, Pl. 14 fig. 5—8.

Cosmopolitan; on salt moist soils, sea-shores and inland (Geitler, 1942, 197).

Numerous diatoms.

Lyngbya aestuarii (Mert.) Liebm. ex Gom., the most recorded *Cyanophycea* from such fish-ponds as are treated above, was not seen in the samples sent to the author. *Lyngbya aestuarii* was recorded as food for the fry of *Chanos chanos* in fish-ponds around the curve of Manila Bay, Philippines (Tilden, 484), and from brackish water fish-ponds near Batavia (van Oye, 1922, 187) and near Pasuruan, East-Java (van Oye, 1923, 280). The last mentioned author noticed five more species of *Cyanophyceae* from the fish-ponds in West-Java and again five more from those in East-Java. All these species were different from those identified from the here treated samples.

References

Drouet, Fr. and W. A. Daily — Revision of the coccoid Myxophyceae — Butler Univ. Bot. Stud. Vol. 12, 1956.

Geitler, L. — Cyanophyceae in Rabenhorst, Kryptogamen-Flora 14, 1930—1932.

Geitler, L. — Schizophyceae in Engler und Prantl, Nat. Pflanzenfam. Aufl. 2, 1942.

Oye, P. van — Beitrag zur Myxophyceen-Flora von Java — Hedwigia 63, 1922, 174—197.

Oye, P. van — Zweiter Beitrag zur Myxophyceen-Flora von Java — Hedwigia 64, 1923, 268—285.

Schuster, W. H. — Over het voedsel van de bandeng — Landbouw 21, 1949.

Schuster, W. H. — De viscultuur in de kustvijvers op Java (Fishculture in saltwater-ponds on Java) — Dep. Landb. Viss. Publ. Onderafd. Binnenviss. 2, 1949.

Tilden, J. E. — The algae and their life relations, 1935.

A NEW PODOSTEMACEA FROM THAILAND, POLYPLEURELLA MICRANTHERA

by

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(Issued 15. VI. 1957).

Among Mr T. Smitinand's[1]) collections made in Thailand a new Podostemacea has been discovered, a description of which follows:

Polypleurella micranthera van Royen, nov. sp. — *Fig. 1.*

Herba nana, basi lichenoidea; individua foliata parvula folia 3 vel 4 naviculiformia, apice obtusa gerentia. Flores terminales, a spathella membranacea inclusa, pedicellis brevibus. Tepala dua, staminis basi in utraque latere posita, oblanceolata, apice acuta. Stamen unum, filamentis linearibus; antherae dorsifixae, ovoideae, apice obtusae, basi incisae, 2-loculares, rimis dua longitudinalibus lateraliter dehiscens; grana pollinis 2-locularia. Ovarium ellipsoideum, compressum, apice acutum, basi decurrens, 12-costatum, costus suturalibus longitudinaliter dimidiatis, 2-locularem septis caducis, placenta centrali, ovulis paucis; styli 2, ovato-lanceolati, basi coherentes, papillati. Capsula ovario exacte similis vel eo paullum maior, septicide, seminibus oblongo-obovoideis.

Thalloid base up to 7 cm in diam. Shoots suberect, 1—1.5 mm long. *Leaves* c. 0.7 by 0.5 mm. Spathella rupturing at apex with a few irregular lobes, pedicels c. 0.5 cm long. *Tepals* oblanceolate, 2—2.5 mm long, one-nerved, acute. *Stamen* 1, inserted at side of ovary directed to the thalloid base, 4—5 mm long, filaments linear, 3.5—4.5 mm long, anther ovoid, c. 0.5 mm long, apex obtuse or truncate, deeply cleft at base. *Ovary* 1.5—2 by c. 1 mm, acute at apex, with 12 distinct nerves of which the two sutural ones divide later longitudinally, originally 2-celled, but septae soon disappearing. Styles c. 0.5 mm long. *Capsule* as large as ovary or slightly larger.

Type specimen: *Smitinand 3185* in L.

Distr.: Thailand.

THAILAND. Chanburi, Khao Soidao, alt. c. 600 m, on rocks in river: *Smitinand 3185 & 3185 A* (L), thalloid herb, January.

Fig. 1. *Polypleurella micranthera,* a. part of plant covering a stone, b. schematic drawing of part of the thalloid base and a few shoots, c. one shoot with opened spathella, d. flower from below, e. one shoot with a fully developed flower seen from aside, f. apical part of stamen, g. anther, h. top of ovary and two styles, i. placenta.. (from *Smithinand 3185* and *3185 A*).

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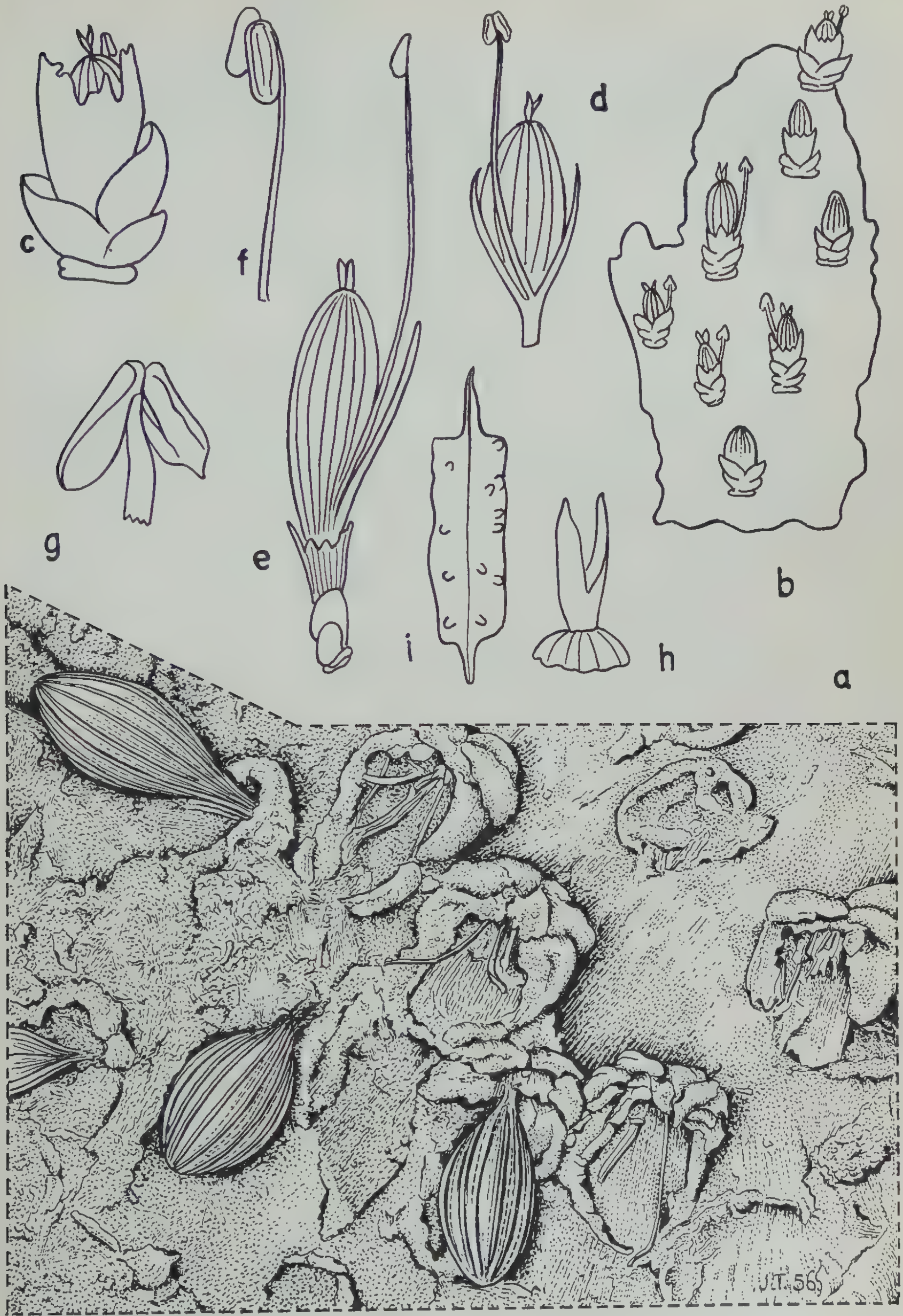
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Remarks: The other species, *P. schmidtiana* (Warming) Engler (Engl. Bot. Jahrb. 61, Beibl. 138 (1927) 9), in the genus *Polypleurella,* differs from the new species in the linear leaves, the different proportion between tepals and stamens, (in *P. schmidtiana* the tepals are as long as the stamen or the filaments), and also in the subulate tepals. In *P. micranthera* the leaves are boat-shaped, the tepals are half as long as the stamen and oblanceolate in shape. In *P. schmidtiana* the filament is twice as long as the anther but in *P. micranthera* the filaments are 8—9 times longer than the anther. The styles in *P. schmidtiana* are half as long as the ovary, those of *P. micranthera* about a third or a fourth of the size of the ovary. The ribs of the ovary of the latter are strongly pominent, those of *P. schmidtiana* weak.

Though the leaves of *P. micranthera* are said to be squamiform it might be asked whether in a juvenile state they do not carry a linear limb which breaks off as soon as the shoot becomes older. This happens rather often in the Podostemaceae in South America. Material collected by Mr Smitinand of a very young thallus in which the shoots were not yet flowering, did show squamiform leaves only, forcing us to accept this type of leaves as the usual one.

RIVEA LAOTICA, A NEW SPECIES FROM INDO-CHINA (CONVOLVULACEAE)

by

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(Issued 15. VI. 1957).

Differt a speciebus ceteris generis *Riveae* habitu erecto et praesertim speciei proximae *Riveae ornatae* sepalis exterioribus margine plano non involuto et staminibus circa medium tubi corollae insertis vel paullo inferius.

INDO-CHINA. Laos, prov. Vientiane, vicinity of Vientiane, c. 200 m alt., in open Dipterocarpaceae monsoon forest, on sandy lateritic soil; erect shrub, 1.50 m high; flowers white with greenish midpetaline bands, fl. Aug. 20, 1953 (rain-season); vernacular name: *phi yik*; *Vidal 2350* (TL, *type*; fragments in L). A fruiting specimen from the same locality was collected Oct. 8, 1952; *Vidal 1120* (TL; fragments in L).

An erect shrub, c. 1.50 m high. Flowering *branches* (*fig. 1, a*) terete or angular to applanate upwards, more or less zigzag, densely covered with very short appressed whitish hairs. *Leaves* often folded along the midrib, orbicular to kidney-shaped, 10—13 cm by 6—12 cm; base deeply cordate with a narrow sinus, apex broadly rounded or slightly emarginate; upper surface glabrous, lower surface rather densely covered with short appressed hairs, finally glabrescent; midrib and c. 5—6 nerves (3 of which from the leaf base) on either side slightly prominent beneath and more densely hairy; petiole shorter than the blade, 3—6 cm long, hairy like the branches, glabrescent, with a glandular spot at the base of the blade. *Flowers* in (1—)2—3 (—5)-flowered cymes, forming a small narrow leafy panicle at the top of the branches; peduncles of the cymes angular, hairy like the branches, 1—1.5, afterwards up to 4 cm long, their subtending leaves much smaller than the others; bracteoles at the base of the pedicels linear, 4—5 mm long, concave, hairy outside, glabrous inside, caducous; pedicels hairy like the branches, 4—8 mm long, in fruit up to 15 mm long. *Sepals* about equal in length; two outer ones oblong, obtuse, c. 15 mm by 8 mm, appressedly hairy with nearly glabrous flat margins; two inner sepals elliptic-oblong to narrowly obovate, rounded to emarginate at the apex, c. 16—17 mm by 9 mm, appressedly hairy with glabrous margins. *Corolla* salver-shaped, white, glabrous outside except for the appressedly hairy greenish midpetaline bands; limb indistinctly lobed, c. 7—8 cm broad; tube c. 5 cm long, slightly hairy inside below the stamens. *Stamens* inserted roughly at the middle of the tube or slightly lower; filaments hairy at their base, varying in length from 6 to 11 mm; anthers linear, c. 7 mm long. *Ovary* glabrous, 4-celled, each cell with 1 ovule; style glabrous, c. 25 mm long;

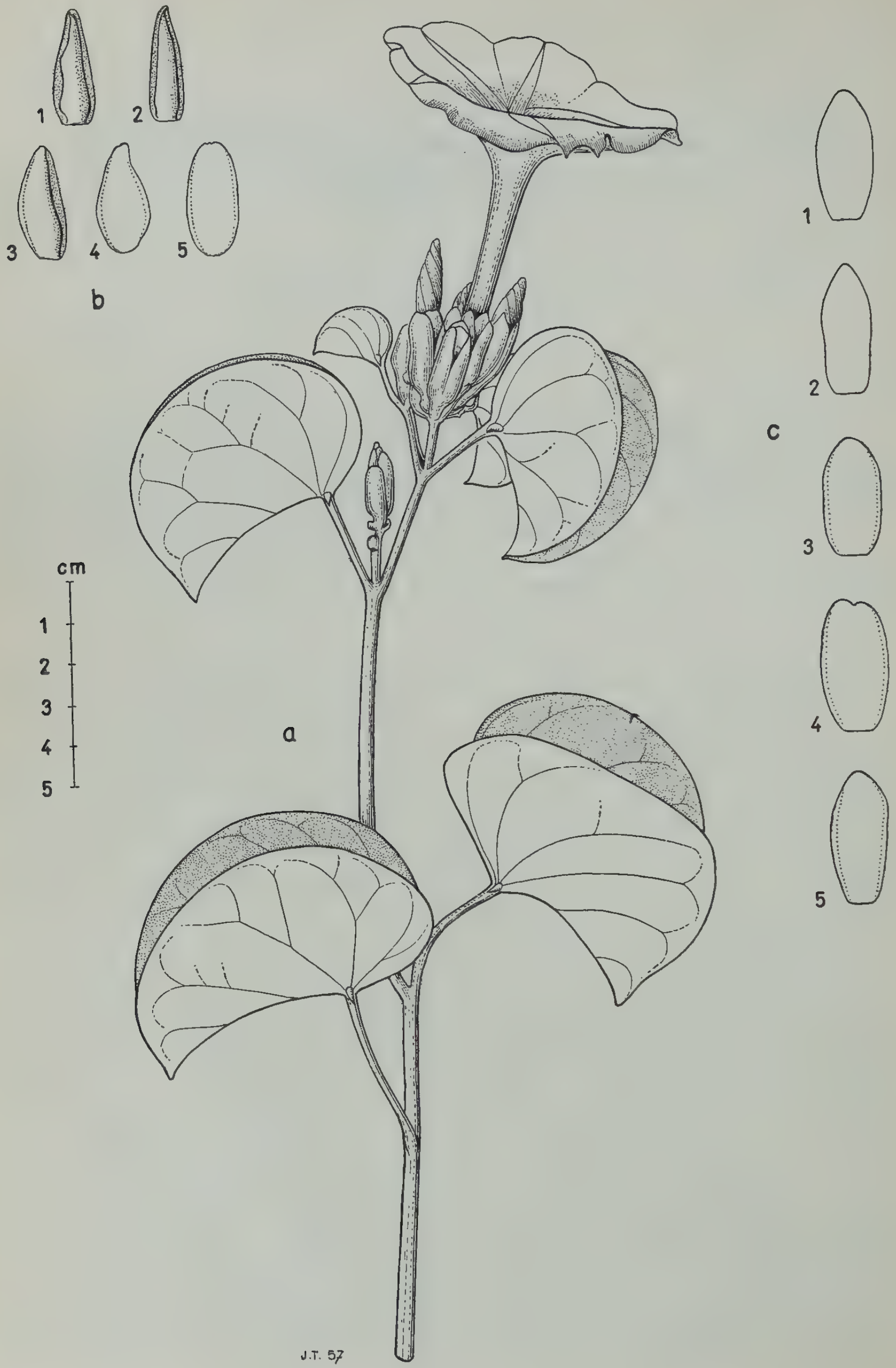

Fig. 1.

stigmas linear-oblong, papillose, c. 4 mm long; disc cupular, c. 1 mm high. *Fruit* a 4-seeded capsule (according to the collector's label), with the patent or reflexed but not enlarged sepals at its base. Seeds (not well preserved) presumably c. 7 mm long, presumably minutely whitish-tomentose.

The genus *Rivea* in its restricted sense, as I have defined it in Blumea 5, 1943, p. 355, is found in tropical continental Asia. It consisted up to now of four species, or a few more, not yet sufficiently distinguished; they are *R. hypocrateriformis* (Desr.) Choisy, 1833, *R. ornata* (Roxb.) Choisy, 1833, *R. collinsae* Craib, 1916, and *R. clarkeana* Craib, 1922, all woody climbers. The present species is, according to the collectors' field-notes, an erect shrub of 1.50 m height. Its foliage much resembles that of *R. ornata* and so do the flowers; the sepals are, however, of a different form (*fig. 1, c*), the outer two being oblong, outside with a hairy central part and nearly glabrous, flat margins, whereas in *R. ornata* (*fig. 1, b*) they are ovate-oblong or oblong-lanceolate with involute margins and are completely covered on their outer surface with a dense short tomentum; the inner two sepals of *R. laotica* are elliptic-oblong to narrowly obovate; in *R. ornata* they are ovate to elliptic-oblong. The stamens are inserted roughly at the middle of the corolla tube or slightly below the middle; in *R. ornata* they are inserted much higher. The bracteoles in *R. laotica* are 4—5 mm long; as far as I can see they are much longer in *R. ornata* (18—20 mm), but I am not quite sure that this is always the case.

Fig. 1. a: flowering branch of *Rivea laotica* Van Ooststr., from a photograph by the collector; b, 1–5: sepals 1–5 of *R. ornata* (Roxb.) Choisy from inside; c, 1–5: sepals 1–5 of *R. laotica*, from inside.

COMMENTS ON GREGUSS'S PHYLOGENETICAL TREE OF PLANTS

by

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Recently (1955) I have published a new version of a phylogenetical tree of the *Cormophyta,* based on morphology, mainly ramification, leaf types, and sporangia. The concept is monophyletic but its basis is strewn with so many queries that the way is open to a number of different opinions. I add a corrected copy of my chart at the end of the present paper (fig. 2), so as to enable the reader to compare my views with those of Greguss (fig. 1).

The difficulty lies of course in our still extremely scanty knowledge of the very oldest land plants and of whether one or several — eventually more or less closely related — algal groups have succeeded in conquering dry land and converting themselves into true land plants in which the greater part of the sporophyte developed into aerial shoots. As a matter of course the fact whether a progeny should be considered to have originated mono- or polyphyletically merely depends on the degree of relatedness of the ancestral group(s). Mono- and polyphyly may seem controversial when extreme cases are compared; actually they are connected by a series of gradual differences just like mono- and polytopy, analogy and homology, and the like, whose criteria may be found in the fields of time, space and/or genealogical relationship.

Meanwhile, despite our scanty knowledge, the first steps have already been taken on the slippery ground of the possible connections between *Algae* and *Cormophyta,* viz. by Chadefaud (1952). As I have pointed out in my paper they mainly refer to structure and ramification rather than to reproductory parts. Chadefaud distinguishes two main types, the rhodomeloid and the fucoid one, and the latter which may have something to do with what in the Cormophyta is generally referred to as dichotomy, may, in different groups, be either a primary or a secondarily acquired character. At least in the first-named case may one recognise the condition which enabled Zimmermann and his adherents to apply the telome theory.

Now quite recently another attempt has been made to bridge the gap between *Cormophyta* on the one hand, and the *Thallophyta* on the other. It has been made on the basis of general morphology but the point of issue was an extensive study of the wood-anatomy — or, as the author, P. Greguss (1955) terms it, xylotomy — of living Gymnosperms. The results, however unexpected and outside the proper subject and — it would seem — the proper experience of the author, are remarkable enough to consider and briefly comment on.

The extensive large-size work consists of three main parts:

I. a short technical introduction;
II. an essay on the phylogeny of the Gymnosperms in the light of xylotomy, with a distributional map, a tabulated statement of the sharing and participation of anatomical characters in the different groups, and a phylogenetical chart of the plant kingdom from the *Algae* upwards;
III. the bulk of the work, being detailed descriptions of the wood-anatomy, with keys, and illustrated by a great number of photomicrographs and line drawings of sections.

It cannot be my task to comment upon the anatomical part of the work; I will have to leave that to experts. But as a phylogeneticist, I cannot forbear from mentioning some of Greguss's phylogenetical ideas, were it only to see where a scheme based upon an entirely different basis (vegetative instead of reproductory) may lead us. Greguss's scheme rests on a very simple, not to say simplistic basis: there are three main types of issue, differing in their mode of ramification, viz. monopodial (*Chlorophyceae*), dichotomous (*Phaeophyceae*), and verticillate (*Characeae, Rhodophyceae*).

This starting consideration seems to be rather superficial as it seems questionable typologically whether the algal groups mentioned can really be characterised as belonging to the ramification types connected with them (it is true, with some question marks).

Greguss claims that, starting with the oldest land plants the three ramification types can be recognised up to the Angiosperms inclusive. This is of course undeniable but the question is whether they have the same genetical value and are based upon homologies as we use to claim for reproductory organs. Since, however, we do not really know what a semophylesis is based upon, it may be worth while to consider the ideas of a man with another *"idée préconçue"* and see where it leads to.

According to Greguss the silurian and devonian *Psilophyta* are less homogeneous than they are often considered to be. This, of course, is correct. In *Rhynia, Horneophyton*, and *Asteroxylon* he speaks of "Mikrophyllen aus epidermalen Emergenzen hervorgegangen", i.e. enation leaves. But *Protopteridium, Taeniocrada*, and *Zosterophyllum* are "von makrophyller Struktur", whereas *Hyenia* and *Calamophyton* are "annäherend Vertizillat".

In the Carboniferous the same or a very similar distinction can be made. *Protolepidodendron, Lepidodendron, Bothrodendron*, and *Ulodendron* are considered microphyllous and pseudodichotomous ("scheingabelig"), i.e. actually monopodial. (I am afraid not many botanists will be inclined to agree here.) On the other hand *Aneurophyton, Archaeopteris* and *Sigillaria* (!) are considered macrophyllous (*Sigillaria* because of the two nerves in the base of the leaf). Verticillate are the well-known carboniferous *Sphenopsida* (the type is continued up to the present time).

The reader may have noticed that the original three ramification types are gradually being replaced — at least partially — by leaf types.

The next period leads up to seed plants. The reader of my previous papers may remember what I think of the *"Spermatophyta"* and the acquisition of the "seed", the ideas of Emberger and Martens on the Prephanerogams, and were to draw a line between the latter and the true Phanerogams on account of the condition of the ovule on being shed, whether or not containing an embryo (initial or full-grown) or merely a gametophyte. Greguss seems to belong to that category of botanists who consider the acquisition of a "seed" (of some description) in whatever group sufficient to base a homologous line (fr. "lignée"; genoreithrum of me) upon (cf Lam 1955, p. 420—421). He says to possess evidence, contributed by M. Jeliasevics that "seeds" have been found in *Sphenopsida* (in which occasional heterospory has been known for some time, cf Emberger, Plantes fossiles ...., 1944, p. 177, *Sphenophyllum*; Arnold, Introd. to Paleobot., 1947, p. 138, *Bowmanites*), and claims that if Jeliasevics's finds are confirmed this would mean one of the most important discoveries in phylogeny.

Greguss considers Gymnosperms only *Cycadopsida, Ginkyo*, and *Coniferopsida*. Whereas the lower groups have apparently been judged on account of their external morphological characters only, his aim regarding the Gymnosperms is to investigate whether his three fundamental groups can be traced among this class chiefly though not exclusively on xylotomical grounds. Again, however, the distinction is to leaf type rather than to ramification. From his exposition of xylotomical observations he claims the following relationships:

A. Macrophyllous group (derived from *Pteropsida*)

1. *Pleuromeia* *Sigillaria* *Cycadofilices* *Cordaitales*	**Cycadales**	*Araucaria* — *Welwitschia* — *Bennettitales*	*Palmae* *Dracaena* etc.
2.	**Ginkyo**	*Araucaria* *Podocarpaceae*	
3. *Cordaitales* —	**Araucaria**	*Ginkyo* *Podocarp.*	*Welwitschia*

$$4.\ \left.\begin{array}{l}\textit{Caytoniales}\\ \textit{Cordaitales}\end{array}\right\}\ \textbf{Podocarpus} — \textit{Araucaria}$$

$$5.\ \textit{Ginkyo}\ \left\{\begin{array}{l}\textbf{Taxales}\ \text{(incl. }\textit{Cephalotax.}\text{)}\\ \textit{Podocarp.}\ \text{(incl. }\textit{Austrotax.}\text{)}\end{array}\right\}\ \textit{Araucaria}$$

B. Microphyllous group.

$$6.\ \left.\begin{array}{l}\textit{Phyllotheca}\\ \textit{Calamites}\end{array}\right\}\ \textbf{Cupressaceae}\ \left\{\begin{array}{l}\textit{Ephedra}\\ \textit{Casuarina}\end{array}\right\} — \text{? }\textit{Sympetalae}\ \text{(on account of often decussate phyllotaxis)}$$

(derived from *Sphenopsida*)

$$7.\ \textit{Lycopsida}\ \left\{\begin{array}{l}\textbf{Pinaceae}\\ \textbf{Taxodiaceae}\end{array}\right.$$

(derived from *Lycopsida*).

Greguss therefore assumes three different series ("Folgen") proceeding from primitive to advanced (mainly on account of medullary rays), connecting

I. *Cycadales, Ginkyo, Araucaria, Podocarpus,* and perhaps *Taxaceae* with the *Pteropsida*;
II. *Cypressaceae* with the *Sphenopsida*;
III. *Taxodiaceae* and *Pinaceae* with the *Lycopsida*.

The (recent) geographical correlations mentioned by Greguss seem rather inaccurate and insufficiently founded. Only in his phylogenetical chart do the original three ramification groups reappear. From this the following relationships may be quoted:

A. Monopodial.

$$\begin{array}{l}\text{? }\textit{Chlorophyceae-}\\ \textit{Musci}\end{array}\left\{\begin{array}{l}\textit{Rhynia}\\ \textit{Hornea}\\ \textit{Asteroxylon}\\ \textit{Protolepido-}\\ \textit{dendron}\end{array}\right\} — \left\{\begin{array}{l}\text{most }\textit{Lycopsida,}\\ \text{except }\textit{Sigillaria,}\\ \textit{Pleuromeia,}\ \text{and}\\ \textit{Iso\"etes}\end{array}\right\} — \left\{\begin{array}{l}\textit{Pinaceae}\\ \textit{Taxodiaceae}\\ \textit{Voltzia}\end{array}\right\} — \textit{Gnetum}\text{?}\ \left\{\begin{array}{l}\textit{Monochlamydeae}\\ \textit{Dialypetaleae}\\ (\textit{e.g. Degeneria})\end{array}\right.$$

B. Dichotomous.

$$\begin{array}{l}\text{? }\textit{Phaeophyceae-}\\ \textit{Hepaticae}\end{array} — \left\{\begin{array}{l}\textit{Zosterophyllum}\\ \textit{Cladoxylon}\\ \textit{Pseudosporochnus}\\ \textit{Protopteridium}\\ \textit{Psilotales}\end{array}\right\} — \left\{\begin{array}{l}\textit{Sigillaria}\\ \textit{Pleuromeia}\\ \textit{Iso\"etes}\end{array}\right\} — \left\{\begin{array}{l}\textit{Pterido-}\\ \textit{spermae}\\ \textit{Filicales}\end{array}\right\} — \left\{\begin{array}{l}\textit{Cycadopsida}\\ \textit{Ginkyoales}\\ \textit{Cordaitales}\\ \textit{Taxales}\\ \textit{Podocarpac.}\\ \textit{Araucariac.}\end{array}\right\} — \textit{Welwitschia} — \left\{\begin{array}{l}\textit{Palmae}\\ \textit{Dracaen}\\ \textit{Cyperale}\end{array}\right.$$

C. Verticillate.

$$\left.\begin{array}{l}\text{? }\textit{Characeae}\\ \text{? }\textit{Rhodophyceae}\end{array}\right\} — \textit{Sphenopsida} —\text{?}\ \left\{\begin{array}{l}\textit{Cupressaceae}\\ \textit{Ephedra}\\ \textit{Casuarina}\end{array}\right.$$

Greguss terminates with a tabulated scheme of the system of all plants in which he tries to keep up his tripartition from the "*Algophyta*" upward.

It is a sort of recapitulation of his phylogenetical chart and makes the impression of a scheme in which the tripartition is raised to a dogma which should be followed at all cost. The three subdivisions would be here:

Algophyta	*Chlorophyta* (?)	*Phaeophyta* (?)	*Rhodophyta* (?)
Bryophyta	*Musci*	*Hepaticae*	?
Psilophyta	*Prolycopsida*	*Propteropsida*	*Prosphenopsida*
Pteridophyta	*Lycopsida*	*Pteropsida*	*Sphenopsida*
Pteridospermae	*Lepidospermae*	*Pterispermae*	*Calamitospermae*
Gymnospermae	*Isospermae*	*Homospermae*	*Cupressospermae*
Chlamydospermae	*Gnetales*	*Welwitschiales*	*Ephedrales*
Angiospermae	*Dicotyledones*	*Monocotyledones*	*Verticillatae*
	a. *Dialypetaleae* etc.	a. *Liliiflorae* etc.	
	b. *Monochlamydeae*, etc.	b. *Palmae*, etc.	

The subdivision does not exactly tally with that used in the phylogenetical chart; some of the new terms, like *Isospermia, Homospermia,* and *Euspermia* are not explained.

Apart from xylotomical evidence (on which I have no founded opinion), Greguss's knowledge of the morphology of living and fossil *Cormophyta* seems rather insufficient to inspire much confidence in his results, and I am afraid the author has overshot his aim in a rather unfortunate way.

My principal objection, both to Greguss's tripartite system as discussed above, and to Emberger's "Prephanerogams" is, that they both tear apart what are generally — and I think, on good grounds — considered really natural groups.

Bibliography

CHADEFAUD, M. — La leçon des Algues; comment elles ont evolué; comment leur évolution peut éclairer celle des plantes supérieures. — Colloque Centre Nat. Rech. Sc. Paris 1952 (Ann. Biol. 28, 1952, C. 9—25).

GREGUSS, P. — Xylotomischer Bestimmung der heute lebenden Gymnospermen. Akadémiai Kiadó, Budapest 1955, 1—308, m. 1500 orig. Mikrophotogr., 350 Tafeln m. Originalzeichnungen und 8 Tabellen.

LAM, H. J. — Comments on two Charts relative to the Phylogeny of the Cormophyta, with some Remarks of a general Nature. Acta Bot. Neerl. 4 (3), 1955, 410—428 (with two phylogenetic charts).

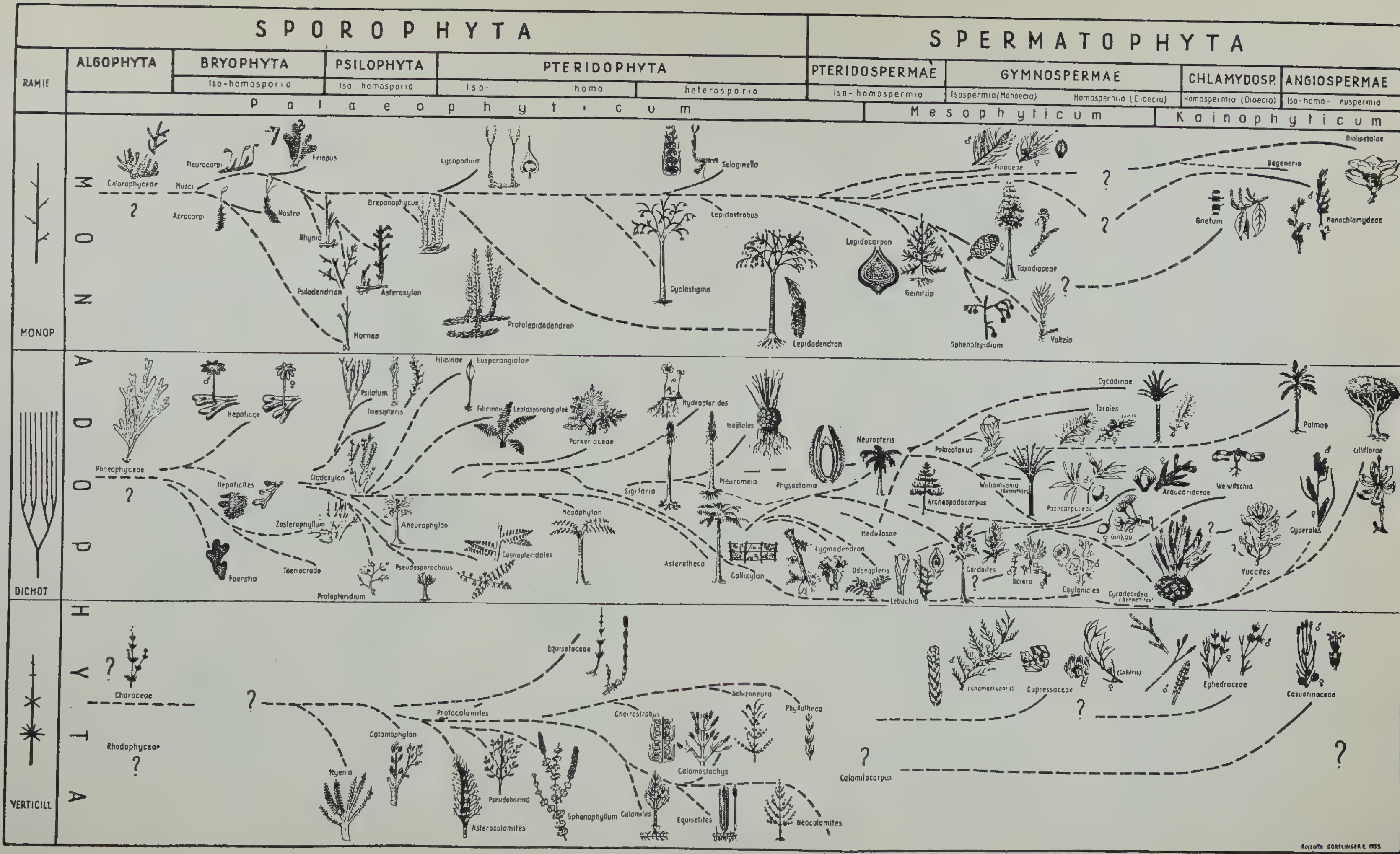

Fig. 1. Greguss's Phylogenetical Chart

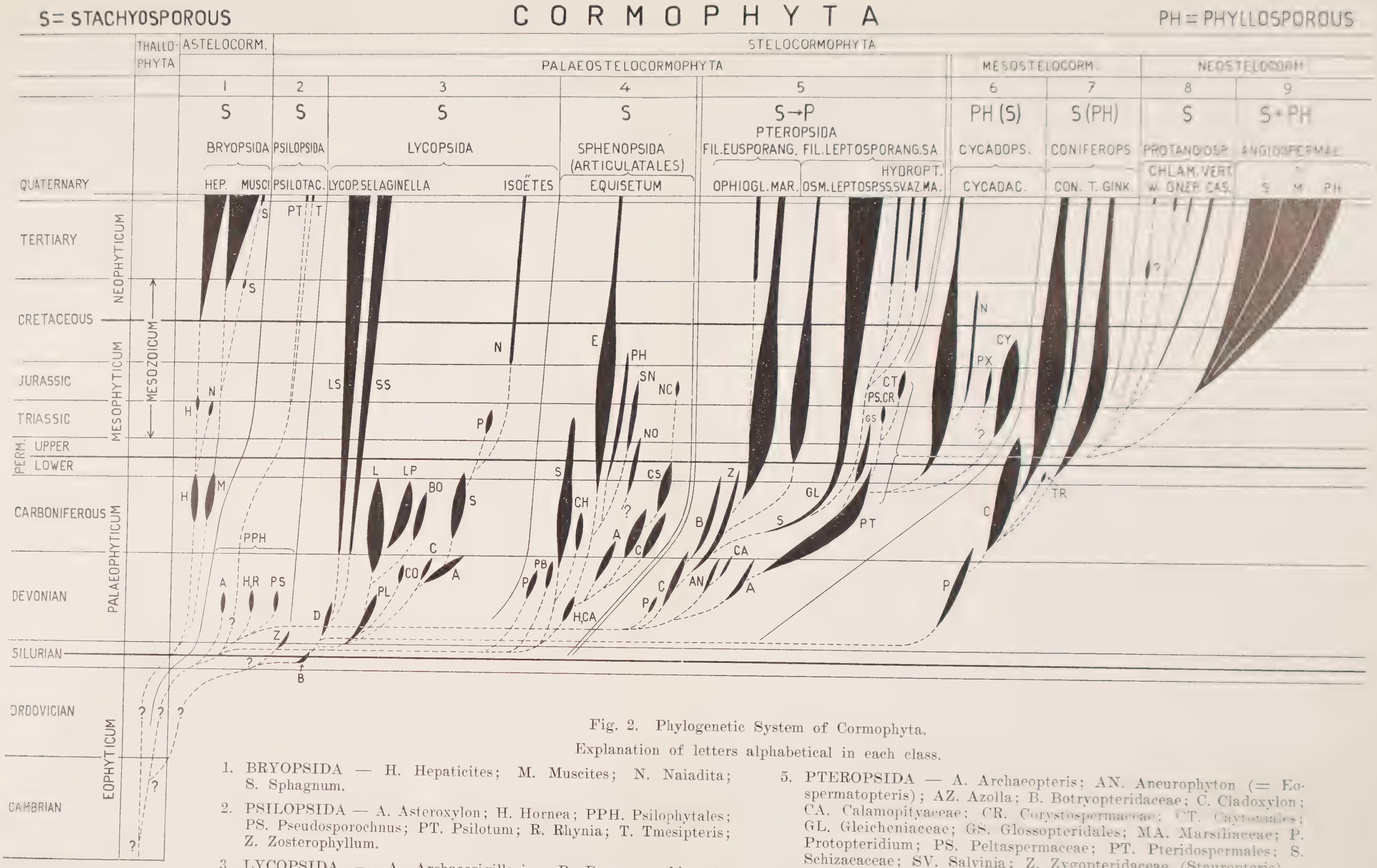

Fig. 2. Phylogenetic System of Cormophyta.

Explanation of letters alphabetical in each class.

1. BRYOPSIDA — H. Hepaticites; M. Muscites; N. Naiadita; S. Sphagnum.
2. PSILOPSIDA — A. Asteroxylon; H. Hornea; PPH. Psilophytales; PS. Pseudosporochnus; PT. Psilotum; R. Rhynia; T. Tmesipteris; Z. Zosterophyllum.
3. LYCOPSIDA — A. Archaeosigillaria; B. Baragwanathia; B. Bothrodendron; C. Cyclostigma; CO. Colpodexylon; D. Drepanophycus; L. Lepidodendron; LP. Lepidophloios; LS. Lycopodites; N. Nathorstiana; P. Pleuromeia; PL. Protolepidodendron; S. Sigillaria; SS. Selaginellites.
4. SPHENOPSIDA — A. Asterocalamites; C. Calamitales; CA. Calamophyton; CH. Cheirostrobus; CS. Calamites; E. Equisetites; H. Hyenia; NC. Neocalamites; NO. Noeggerathiales (?); P. Psilophyton; PB. Pseudobornia; PH. Phyllotheca; S. Sphenophyllum; SN. Schizoneura.
5. PTEROPSIDA — A. Archaeopteris; AN. Aneurophyton (= Eospermatopteris); AZ. Azolla; B. Botryopteridaceae; C. Cladoxylon; CA. Calamopityaceae; CR. Corystospermaceae; CT. Caytoniales; GL. Gleicheniaceae; GS. Glossopteridales; MA. Marsiliaceae; P. Protopteridium; PS. Peltaspermaceae; PT. Pteridospermales; S. Schizaeaceae; SV. Salvinia; Z. Zygopteridaceae (Stauropteris).
6. CYCADOPSIDA — CY. Cycadeoidales; N. Nilssoniales; PX. Pentoxylales.
7. CONIFEROPSIDA — C. Cordaitales; P. Pityales; T. Taxales; TR. Trichopityales.
8. PROTANGIOSPERMAE — CAS. Casuarina; EP. Ephedra; GN. Gnetum; W. Welwitschia.
9. ANGIOSPERMAE — M. Mixed; PH. Phyllosporous; S. Stachysporous.

NYHOLM, E., Illustrated Moss Flora of Fennoscandia. II. Musci, fasc. 1, 1—87, 1954. Price Sw. cr. 15.—; fasc. 2, 85(!)—189, 1956. CWK Gleerup, Lund. Price Sw. cr. 15.—.

These fascicles, the first part of a moss flora of Fennoscandia, comprise five (acrocarpous) orders of the Eubryales. All species and a number of forms and varieties have been included. There are clear dichotomous keys to genera and species. Of each species the original literature, the most familiar synonyms, an excellent description with critical remarks on the differences between allied species and original drawings have been given. Ecology and general distribution have been indicated, with special reference to Scandinavia. In addition there is a glossary of technical terms, which is nearly identical to that in Dixon's famous Student's Handbook of British Mosses, though less extensive.

Nevertheless it may be doubted whether this book actually fills a need in Scandinavian bryology. It is not suited for "workers in all fields of botany, forestry, limnology, etc.", as the author suggests, since keys to the families are lacking. Besides, there is the excellent moss flora of Brotherus, Die Laubmoose Fennoscandias, not mentioned in this connection in the preface.

It is true that Brotherus does not illustrate all species and that his keys are not always dichotomous and often make unnecessary use of difficult or uncontrollable anatomical, sexual and sporophyte characters. But, although being somewhat better in this respect, the keys in Nyholm's flora are by far surpassed by those in Dixon's Student's Handbook, which in this respect fully supplements the work of Brotherus. Moreover, the drawings both in Brotherus and in Dixon are generally better than those of Nyholm's, which, by the way, lack any indication of the scale of magnification used.

Literature, synonyms and detailed distribution in Scandinavia are also to be found in Brotherus.

J. J. BARKMAN.

ARNELL, S., Illustrated Moss Flora of Fennoscandia. I. Hepaticae, 1—314, 98 figs. — CWK Gleerup, Lund, 1956. Price Sw. cr. 35.—.

After some fascicles on mosses had appeared (cf. the above review), a volume dealing with hepatics has now been published. The main differences from the previous fascicles are the following. This volume is partly a translation from Buch's liverwort flora of Finland, written in Finnish (Suomen Maksasammalet, 1936) and a synthesis of that work and the Swedish flora by Arnell (1928). The drawings have for the greater part been borrowed from these and other floras; as a rule, they are excellent and of a higher quality than those in the moss fascicles. Unfortunately, unlike the British flora of MacVicar, Arnell's book only gives illustrations of leaf cells for a restricted number of species, and a scale of magnification is not always indicated. The addition of a key for the families means a great improvement. The glossary is also much more extensive than in the moss fascicles, even more so than in MacVicar's Handbook. Explanations are in Swedish, but in many (not all) cases the Latin or Greek roots have been added. This book seems most useful indeed and actually fills a long-felt need.

J. J. BARKMAN.

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to Vol. VIII

compiled by

P. VAN ROYEN

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